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OF

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CONTENTS

PAGE

1. The Rise and Development of the Sheep Industry in the Highlands and North of Scotland. By Professor J. A. S. Watson 1

2. Louping-Ill. By Dr J. Russell Greig . . . 26

3. The Prevention of Finger-and-Toe in Turnips. Liming and a Disease-Resistant Variety. By Professor James Hendrick, B.Sc., F.I.C. . . . 52

4. Restoring the Fertility of Scottish Sheep Grazings. By J. B. Orr, D.S.O., M.C., M.A., M.D., D.Sc., F.R.S., and Allan H. H. Fraser, B.Sc., M.D. . . . 64

5. Intensive Manuring of Grassland. Results obtained from the Craibstone Drain Gauges. By Professor James Hendrick, B.Sc., F.I.C., and H. D. Welsh . 86

6. Some Economic Methods of Rearing Calves. By Principal William G. R. Paterson, B.Sc., N.D.A.(Hons.) 97

7. The Dentition of the Pig. By Principal O. Charnock Bradley, M.D., D.Sc., M.R.C.V.S. 111

8. Insect and other Enemies in 1931. By R. Stewart MacDougall, M.A., D.Sc., F.R.S.E. 130

9. Agricultural Research in Scotland in 1931. Being a Brief Summary of Work at the Scottish Agricultural Research Stations during the Year . . 152

10. Milk Records. By William Stevenson, B.Sc., N.D.A., N.D.D. 169

11. Analyses for Members during 1931. By Dr J. F. Tocher 195

12. THE CEREAL AND OTHER CROPS OF SCOTLAND FOR 1931 201

13. THE WEATHER OF SCOTLAND IN 1931. By J. CRICHTON, M.A., B.SC., F.R.S.E. 229

Rainfall Records for 1931, in inches 240

14. AGRICULTURAL STATISTICS 241

15. PRICES OF GRAIN IN EDINBURGH MARKET FOR 1931 . 255

16. PRICES OF SHEEP SINCE 1818 256

17. PRICES OF WOOL SINCE 1818 260

18. HUNDREDTH SHOW AT EDINBURGH, 1931 (*Illustrated*) . 263

19. PREMIUMS AWARDED BY THE SOCIETY IN 1931 . . . 287

20. DUMFRIES SHOW, 1930, ALTERATIONS IN PRIZE LIST . 357

21. ACCOUNTS OF THE SOCIETY FOR 1930-31 . . . 360

22. PROCEEDINGS AT SOCIETY'S BOARD AND GENERAL MEETINGS 369

APPENDIX.

PREMIUMS OFFERED BY THE SOCIETY IN 1932 . . . 1

MEMBERS ADMITTED JUNE 1931 AND JANUARY 1932 . . 152

INDEX . . . . *At end*

*** *It is to be distinctly understood that the Society is not responsible for the views, statements, or opinions of any of the Writers whose Papers are published in the 'Transactions.'*

JOHN STIRTON,
Secretary.

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ILLUSTRATIONS

FIG. PAGE

1. Diagram of the unworn permanent teeth of the pig . 112
2. Chart to show the period of eruption of the first true molar ($M1$), third (corner) incisor ($I3$), canine or tusk (C), and second true molar ($M2$), as found in the Edinburgh specimens . . 113
3. 15 5/7 weeks old. The youngest specimen in which the first true molar ($M1$) is in process of eruption . . 114
4. 26 3/7 weeks old. The oldest specimen in which the first true molar ($M1$) is in process of eruption . . 115
5. 27 1/7 weeks old . . . 117
6. 27 3/7 weeks old . . . 118
7. 30 3/7 weeks old . . . 119
8. 30 3/7 weeks old . . . 121
9. 31 4/7 weeks old . . . 122
10. 34 4/7 weeks old . . . 123
11. 34 4/7 weeks old . . . 124
12. 40 4/7 weeks old . . . 125
13. 42 weeks old . . . 126
14. 66 weeks old . . . 127
15. The Flea (*Pulex irritans*) . 134
16. Larva of Flea . . . 135
17. The Greenhouse Grasshopper (*Tachycines asynamorus*) . 139
18. The Common Gnat (male) . 144
19. The Larva of the Common Gnat hanging head downwards 145
20. The Musk Rat or Musquash 148
21. Clydesdale Entire Colt, "Dunmore Supreme" 21,753 . 281
22. Clydesdale Gelding, "St Mungo" . . . 281
23. Clydesdale Mare, "Onoway" 282
24. Shire Filly, "Theale Abbess" 123,425 282
25. Suffolk Gelding, "Punch" . 283
26. Hunter Filly, "Priory Lass" 283
27. Western Island Pony Mare, "Lady Phœnix" 3376 . 284
28. Shetland Pony Stallion, "Lord George" 1264 . . . 284
29. Mare in Harness, "Clyde Masque" 26,430 . . 285

TRANSACTIONS

OF

THE HIGHLAND AND AGRICULTURAL
SOCIETY OF SCOTLAND

THE RISE AND DEVELOPMENT OF THE SHEEP INDUSTRY IN THE HIGHLANDS AND NORTH OF SCOTLAND.

By PROFESSOR J. A. S. WATSON, School of Rural Economy, Oxford.

COMMERCIAL sheep farming in the Highlands and North of Scotland is a comparatively modern industry. The first sheep farmers migrated from the South of Scotland into Dumbartonshire and Argyll about 1760, and it was soon evident that the spread of the new system was destined to have important consequences, partly good and partly evil, for a very large part of the country. The movement spread gradually northward, the pioneer sheep men reaching Caithness and Sutherland in the early years of the nineteenth century. Thirty years later the revolution was substantially completed, though, of course, traces of the older system remain till the present day. The last hundred years have seen a good many changes within the industry, but the position of sheep as the staple product of the area has remained unchallenged.

THE OLD HIGHLAND HUSBANDRY.

It may be well briefly to sketch the state of agriculture which prevailed before the specialised sheep farms came into being.

Until after the ''Forty-five' the social and political system of the Middle Ages, as well as an old and primitive system of agriculture, prevailed over most of the country beyond the Highland line. Like most primitive systems of farming, that of the Highlands was of the 'subsistence' type. Each town-ship, or at least each parish, produced within its own bounds the great bulk of the people's necessaries, and very little was bought or sold. Even in the most mountainous districts patches of land in the glens were kept under tillage, or at least were used intermittently for arable cultivation. Bere or four-rowed barley was generally the most important food crop. The old small oat (*Avena strigosa*) was also widely grown, and on the better land the common oat or perhaps a mixture of the two species (brockit corn) was cultivated. There were also numerous small patches of flax, which was retted and spun on the farm and woven by local hand-loom weavers. Wherever the patches of arable were too small or too awkwardly situated for the plough they were tilled with the caschròm or crooked spade. To these crops there was added, during the eighteenth century, the potato, the cultivation of which brought about a very substantial improvement in the food situation in many districts. The crop was first introduced into the Hebrides in 1743, and twenty years later it was furnishing a large proportion of the people's food in the areas best suited to it.

In the more mountainous districts live-stock was, of course, always of more consequence than tillage. The small old type of Highland cattle formed the most important class of stock, and the annual sale of a few three or four-year-old stores provided the only substantial cash income of the ordinary farmer. The system of cattle husbandry was a combination of the store rearing with a very primitive dairy industry. The cows calved in spring and produced milk only in summer. During this season the herd was collected every evening and the cows separated from the calves, each group being put in a separate fold. The following morning the calves were admitted one by one, and each cow was milked while its calf also sucked, the cows being generally too wild to stand unless their calves were by them. Milking thus degenerated into something of a riot.[1] As soon as milking was finished the herd went to pasture for the remainder of the day. The yields under this scheme of management were necessarily low —perhaps a gallon per cow per day in the early summer, and half this amount later on. The milk was largely used for butter-making, the skim and butter-milk being consumed by the farmer and his family. Some cheese was also made, but for this purpose goats' milk was more generally used than cows'. In many districts the herds of goats were very numerous.

Sheep, which will be more fully described presently, furnished about as much wool as was necessary to clothe the population, and this was the chief object for which they were kept. The wool was carded and spun on the farms and was woven locally. Pigs were generally very few, but considerable numbers of poultry were commonly kept. Throughout the West Highlands and Islands the native ponies were the only work animals, being yoked four abreast in the small ineffective plough, and were either equipped with side creels or yoked to sledges for transport purposes. Along both sides of the Moray Firth the heavier Aberdeenshire type of plough was used, the team consisting of anything between six and twelve oxen yoked two and two. In this area horses were used for most of the other farm work. In Caithness, Sutherland and Orkney cattle and horses were used indiscriminately, and often in mixed teams, for all kinds of work.

---

[1] The business is humorously described in Osgood Mackenzie's 'A Hundred Years in the Highlands.'

In the lowland districts round the Moray Firth and in the extreme north, the general system differed from the above only in so far that the emphasis was upon arable land and grain rather than upon stock. There was a fairly regular short-distance trade between the Highland and Lowland areas, for in most years districts like the Laigh of Moray produced a considerable surplus of grain, of which there was often a severe scarcity in the high countries. Conversely the plough teams of the Lowlands were mostly recruited from the Highlands, though most of the cattle, at least after 1600, eventually found their way south into England to be fattened. The system of land tenure was very complicated. Often an estate would be let as a whole to a tacksman, usually a younger son of some landowner, and often latterly a retired army officer. The tacksman kept a considerable proportion of the land in hand, working it partly by hired labour, but largely by the services of his tenants. The larger among the latter usually let off parts of their holdings to sub-tenants and cottars, again obtaining a considerable proportion of the rents in the form of labour. The old rent rolls are very complicated documents, for, apart from money payments, grain or meal, poultry, eggs, sheep and sometimes cattle are included, and there is usually a long list of servitudes—man days and horse days for stipulated duties at various times of the year.

That the old system, judged by modern standards, was very inefficient goes almost without saying. Even judged as what it was supposed to be—viz., a means of providing a bare living for the population—it often failed, for scarcity of food was almost chronic, and actual starvation was not uncommon. Very often the supplies of meal and potatoes were completely exhausted by early summer, and there was little to fall back upon except skim milk and whey. Sometimes the poorer people had to resort to bleeding their cattle in order to augment their food supplies. The blood was allowed to coagulate, and the clot was then cut to pieces and eaten with whey.

Some other drawbacks of the old system may be briefly mentioned. It seems that the higher grazings were never properly or fully utilised. Every year, usually in June, the herds and flocks were taken up to the summer shielings to feed on the high ground, but after some six or eight weeks the people had to get back to their permanent homes in order to secure their supplies of peat and to scrape together a little hay. None of the live-stock was sufficiently hardy to survive the winter on the open hill, and since supplies of hay and straw were at the best very scanty, a wet summer or a severe winter led to a very heavy loss of animal life. The arable crops necessarily failed very often, and there was no considerable export wherewith to pay for external supplies of grain. Again, the number of work animals maintained was enormous—some three or four times what would now seem an adequate allowance—because the arable work was very ill distributed throughout the season. This applied also to human labour; immense exertions were necessary in spring if the desired acreage of grain was to be sown in reasonable time, while most of the summer was taken up in cutting and carrying peats, in haymaking and harvesting, in milking, butter-making and cheese-making. On the other hand, winter was a season of idleness. In order then to raise the standard of life of the people, and to provide some insurance against the vagaries of the climate—severe winters and bad harvests—it was essential that the country should produce something to sell. Various attempts were made to achieve this end through the establishment of subsidiary industries. One of these indeed—the manufacture of kelp—was very successful in the Islands and along the west coast for a number of years. The industry, first introduced in 1734, attained considerable dimensions, and became immensely profitable during the Napoleonic wars. After that time cheap imported supplies of potash brought the industry to a sudden end and threw many thousands of people out of work. In any case, the kelp business failed to provide the kind of employment that was wanted; it required labour at just that season when it was most needed on the land. The kelpers for the most part slaved hard for three or four months of the year and were idle for the remaining eight or nine. There were many attempts, both by Government and by the Highland Society, to develop the linen industry and to establish fisheries, but no considerable or permanent success was achieved. Sheep farming, as the event proved, was the only industry that could provide a reasonable standard of life for the worker and a reasonable prospect of a return on capital. Grouse, red deer and salmon were, of course, later to prove valuable resources, but a hundred and fifty years ago their only use was as food for the native population.

The Old Sheep.

The old local types of sheep were not destined to play any important part in the new system. They are commonly referred to as though they belonged to one breed or type, but actual descriptions show that there must have been considerable variety. The descriptions, indeed, agree as to the small size of the old sheep. Mature animals are said to have reached carcase weights of no more than 20 or 25 lb. under average conditions, occasionally reaching 30 lb. but sometimes no more than 16 lb.; there is also general agreement that the mutton, though too lean and somewhat too highly flavoured for some palates, was good eating. Finally, the fleece, although it contained a proportion of hairy fibres and weighed no more than a pound or two, was mostly composed of fine soft wool. When, however, we come to what may be called breed points, the various descriptions do not tally. It seems clear that the prevailing type in Orkney, in the Northern Hebrides and along the north-west coast was closely related to the still surviving Shetland breed, short-tailed and of various colours—white, black, moorit or grey, and often piebald. On the other hand, the sheep in Arran and other western areas are described as tan-faced, and no mention is made of the short tail, points that would seem to indicate relationship with the modern Welsh Mountain breed. In Caithness and Sutherland the old breed was known as the Kerry, and was blackfaced, small and narrow of frame, short, very unshapely and slow of growth.

Most writers of the period about 1800 condemn the old sheep as a very unprofitable animal. The chief exception is the eminent Dr James Anderson, who thought that the introduction of the Blackface to Aberdeenshire was a regrettable error, and that it would have been better seriously to set about the improvement by selection of the little old breed. Anderson, however, would seem to have been thinking especially of the supply of wool for the Aberdeenshire stocking manufacture, which was still important when he wrote, and for which, of course, Blackface wool was quite unsuitable; the Cheviot had not yet been thought of as a possible sheep stock for the district.

In the arable districts of Aberdeenshire, and also in the low country along the Moray Firth, it was not the competition of the southern breeds that led to the extinction of the old breed. There, as also in Angus and Fife, the agricultural revolution meant the enclosure of moorlands, the increase of corn growing and specialisation on cattle. Sheep in many districts dropped out of the system altogether, and their return is an affair of recent years. Dr Skene Keith in the

Aberdeenshire Report (1811) says that the sheep stock of Aberdeenshire declined from 600,000 to 100,000 between 1690 and 1810, and instances one parish where the number fell from 4500 in 1778 to 141 in 1809.

Here and there the old native sheep of the north were used as a foundation for the new system, and were 'crossed in' to Blackface or Cheviot as the case might be. But more usually the introduction of sheep farming meant the migration of a south country 'store master' with south country shepherds, sheep and dogs.

SOME PIONEERS.

Specialised commercial sheep farming in the South of Scotland goes back to the time of the earliest written history. The oldest Scottish agricultural document extant is a rental of Kelso Abbey of about 1190, and from this we learn that the monks of that time had considerable flocks of sheep on the Cheviot Hills, and exported their wool from Berwick. There is no real evidence as to when or how the business began. Blackface or 'Short sheep' occupied by far the biggest stretch of country, including Selkirk, Lanark, the higher districts of Ayrshire, &c. These are commonly supposed to have been introduced (perhaps 'lifted' would be a better word) from the Pennine region of England, but it seems impossible to get any authentic information. The Cheviot breed occupied a much smaller area in the East Borders. In Galloway the little old type persisted until the eighteenth century.

Whyte and Macfarlan, in their 'Agricultural Report' on Dumbartonshire, say that Blackface sheep were introduced into that county about 1750, but give no details. The first adventurer upon a large scale was John Campbell of Lagwine, whose story is thus related in the 'Farmers' Magazine' for 1811 :—

"Mr Campbell was proprietor of the estate of Garieve, in the parish of New Cumnock, Ayrshire . . . ; and possessed, as tenant, several sheep-farms, besides, in that neighbourhood. About the middle of last century, there happened several successive bad seasons, particularly for sheep-farmers. Mr Campbell, whose speculations were rather deep for his capital, suffered repeated heavy losses by death of sheep, which he as often replaced by stock bought in to replenish his farms; but at last gave up all to his creditors, though with little or no shortcoming, saying, his going on was like *tooming water into a riven dish.* Immediately after his misfortunes, about 1755 or 1756, he set off for the West Highlands, and leased the extensive farm of Glenevoe, part of the Ardkinlass estate. He stocked it with slack or cast ewes from his own country; and such was the aptitude of those hills for sheep, that he said they *sprang an inch in the hour* after going there;—a sure sign of a renovated constitution, and increased growth. He afterwards rented several farms in different parts of Argyleshire; and resided long on the farm of Glenmallachan, in the Luss estate. All these farms yielded a rent, at least triple of what they formerly did, when stocked with cattle; and Mr Campbell, by sometimes visiting the place of his nativity, spread there, and over all the south-west of Scotland, accounts of the wonderful cheapness of land in the Highlands when stocked with sheep; consequently, numbers followed his footsteps, and were by him, now generally acquainted with the proprietors, introduced to very lucrative bargains, while he was hailed by them as an apostle preaching a new light. At last, the new system attracted such numbers, that rents increased to an astonishing degree; and the lairds, though very thankful to Mr Campbell, at first, for opening their eyes, now began to think their land let by far too cheap. Lagwine, whose influence and opinion was great with the Lowland men in quest of such farms, opposed such highly extravagant rents; and, at this period, a number of Highland proprietors joined in offering him a very handsome annuity to leave their country, and to reside in Edinburgh;—at least, so say his friends. He did not, however, accede to this offer; but continued, in his old way, the father of the system he had introduced; and had, by this time, three sons and a married daughter, in very beneficial farms in that country. Soon after Lagwine's first transactions in this way, Mr Thomas Gillespie, from Lanarkshire, took large farms in the M'Donalds' country; and very deservedly realised a handsome fortune. From the West, the new system found its way into the North Highlands; and Mr Mitchell, mentioned by Sir George S. Mackenzie, was a native also of New Cumnock. Had Mr Campbell gone to the Highlands with a moderate capital, or, as he himself expressed it, *with but a clean tail* (for he had not got a settlement with his creditors), he might have made an immense fortune. But the law cost him, first and last, a great sum of money; not so much from a litigious disposition, as they who best know him affirm, as from the indignancy of feeling, on being treated unjustly, as he conceived; and the feudal law of chieftainship being applied to him, in place of the law of the land. When a circumstance of this sort occurred, Lagwine immediately landed the laird in the Court of Session; and this also induced the lairds to make the offer above mentioned. In this view of the matter, he seems to have introduced not only sheep, but also a spirit of resistance to feudal oppression, into that country. In his old age, he bargained for a very extensive farm in the North

Highlands, which again landed him in the Court of Session; and obliged him, as frequently had been the case before, to spend the winter in Edinburgh, attending the Court. At last, he died at Greenock, at a very advanced age, when he had as much business on his hands, of the kind above described, as he ever had at any time of his life, and was as ardent in the pursuit of it.

"Such was the man who chiefly contributed to introduce sheep, in place of cattle, into the Highlands of Scotland; by which the proprietors there, the markets of Edinburgh and Glasgow, and the country at large, have been immensely benefited; and therefore well deserves being recorded in your useful publication. His private character was that of an honest man, and he was generally much liked in both Lowlands and Highlands;—but of great eccentricity—singular and uncouth in his appearance and conversation—truly an original. Of strong natural abilities, but without education, he went through much business, and will be remembered long by many in both Highlands and Lowlands."

About 1762 a group of farmers from Annandale took farms in Perthshire, and from this time onwards there was a steady flow of settlers, chiefly from Clydesdale, Tweeddale (Peebles) and Nithsdale. Central Perthshire was reached by 1770, and Inverness very little later.

In the East Grampians the movement took another form. The mountainous tracts in North Angus and Kincardine were long regarded as unsuitable country for ewe stocks, and as an alternative they were used as grazings for Blackface wethers. The latter were purchased annually as lambs, first at West Linton and latterly at Lanark, to which centre the great south country sheep sale was transferred in 1857. In the earlier era of this business the wethers were kept for either three or four years, spending perhaps eight months of the year on the higher grazings, and the period from December till March in the glens or the low country. The business seems to have been run by local men; at least there is no mention of immigration.

In 1774 Sir John Lockhart Ross of Balnagowan purchased a lot of Blackface ewes at West Linton and placed them upon one of the high-lying farms in Ross-shire. He seems to have encountered rather more than the usual amount of difficulty, and he was, for several years, the only sheep farmer north of Glenmore. In 1781 or 1782 Sir John persuaded a Mr Geddes, who was already sheep farming at Tummel Bridge in Perthshire, to take over the farm and the flock, after which things went somewhat better. Quite a number of sheep men, chiefly from Perthshire and Inverness-shire, had moved into Ross-shire by 1790.

In Caithness the first move was made by Sir John Sinclair, the President of the old Board of Agriculture, a very enthusiastic improver and a great partisan of the Cheviot breed. Sir John established a Cheviot flock upon his farm at Langwell in 1792, and within a few years had increased his stock to five hundred head. Soon after this a number of men, chiefly from the east borders, made their way to Caithness; apparently the early flocks of Caithness were without exception Cheviots.

The last of the mainland counties to be affected was Sutherland, but here developments went forward with exceptional rapidity; as a result the feeling against the new-comers and their sheep was exceptionally bitter. A beginning was made in a small way in 1807, and three years later a very big sheep enterprise was started by Messrs Atkinson & Marshall, from the neighbourhood of Alnwick in Northumberland. They are said to have invested first and last some £20,000 in the business. The great period of expansion was that between 1810 and 1820, when the bulk of the well-known clearances were made. The number of sheep rose from 15,000 in 1811 to 130,000 in 1820, of which latter number 118,000 were Cheviots. This total, however, was ultimately to be doubled. The stocking of Sutherland and Caithness with Cheviots was probably hastened by severe outbreaks of scab and liver rot in 1807, which swept away a very large proportion of the old sheep and also of the goats.

It is not to be supposed that everything went smoothly with the pioneers. It is true that surprisingly little difficulty was encountered in acclimatising the imported sheep. On the whole, the early accounts show that these throve amazingly in the early years after their introduction. It must, of course, be remembered that the first-comers had the pick of the land, and that they did not choose the worst; also that the country had long been understocked, and had been grazed mainly with cattle, so that most of the grazings were in good condition for the change. Lastly, under the system that was at first followed, nearly every farm had both a wether and a ewe stock, so that the latter could be confined to the lower and better land. The number of foxes was in some districts a rather serious difficulty, but this was overcome in time. Lack of experience of the climate led to some avoidable losses, but most of the pioneers seem to have erred on the safe-side, removing stock in winter from grazings that now carry sheep throughout the year.

By far the greatest difficulty arose out of the very natural opposition of the natives, who saw only too clearly that the new men and the new system would deprive many of them of their livelihood and drive them from their homes. The following extracts from a poem by Duncan Ban Macintyre, written between 1790 and 1804, well illustrates the feeling.

It is far from being the bitterest of the many Gaelic writings on the subject of sheep.[1]

THE SONG OF THE FOXES.

(Oran nam Balgairean).

My blessing be upon the foxes, because that they hunt the sheep—
The sheep with the brockit faces that have made confusion in all the world,
Turning our country to desert and putting up the rents of our lands.
Now is no place left for the farmer—his livelihood is gone ;
Hard necessity drives him to forsake the home of his fathers.
The townships and the shielings, where once hospitality dwelt,
They are now nought but ruins, and there is no cultivation in the fields.

There is no filly, nor mare with foal by her side.
Gone too are the heifers that suckled their calves.
No need is there of dairymaids, for every fold is broken and scattered.
No lad can earn a wage save only the shepherd of the sheep.
The good useful goats, they too are gone. . . .

Deeply do I hate the man who abuses the foxes,
Setting a dog to hunt them, shooting at them with small shot.
The cubs, if they had what I wish them, short lives were not their care.
Good luck to them, say I, and may they never die but of old age.

Naturally, in view of such feelings, sheep stealing was common and was regarded as no crime. A story is told of a casual meeting between John Campbell of Lagwine and a judge upon circuit who was next day due to try a man for sheep stealing. " Depend upon it," said the judge, " if it is proven the man will be hanged." " Hang ! " said Lagwine. " Hang ane hereawa for stealin' sheep ! Your Lordship may as well kill a cleg in simmer."

In the north there was a certain amount of organised persecution of the sheep farmers, sheep being driven off their ground or even chased into rivers or lochs. Eleven leading flockmasters in Sutherland, who formed themselves into a kind of mutual protection society, stated that they lost, between them, about 1500 sheep in 1815 and a similar number the following year. The most important incident occurred in Ross-shire in the year 1792, when a large band of Highland farmers and others resolved to gather all the sheep in the county and drive them over the county border into Inverness-shire. Actually they collected some 10,000, and only desisted from their enterprise when a company of infantry was sent out from Inverness to put a stop to it. Two of the participants were transported, and several more received sentences of imprisonment. However, as more and more of the old tacksmen class became sheep farmers and more of the natives became shepherds, the opposition began to die down.

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[1] The writer is indebted to Mr J. L. Campbell for the translation.

Despite their difficulties it would seem that most of the early adventurers made handsome profits, while landlords were able to obtain vastly increased rents from their land. Not only were rents doubled, trebled and even occasionally quadrupled, but the landlord, with a substantial capitalist as his tenant, felt that his rent was safe, whereas before, with a horde of poor crofter tenants, arrears had been very common, and occasionally the landlord, instead of receiving an income, had to pay out money to save his people from famine.

BREEDS.

The earlier sheep farmers in the West Highlands, and also through Perth and Inverness-shire, were Blackface men; indeed, at the time in question the Cheviot seems to have been little known outside its own district. After 1790, however, attention was called, by Sir John Sinclair and other prominent men, to the merits of the Cheviot, and particularly to the superior quality and higher value of its wool.

It was realised from the outset that the very poorest, highest and most purely heather country was suited only to Blackface sheep, and that comparatively low and grassy country was more profitably grazed with Cheviots. Obviously there must be, under any particular set of economic conditions, some land on which the balance of advantage is doubtful and where the choice is a matter of the grazier's personal preference. But there are many grazings on which the breed has been changed, sometimes more than once, and where the cause has been a change of circumstances.

The Blackface had the advantage of being first in the field in every county except Caithness, where the Cheviot was the original choice. The nineteenth century started with a great Cheviot boom. Fine wool was then selling at high prices, and a fine-wooled mountain sheep was obviously a very valuable discovery to a country bent on developing its mountain land. Not only were Cheviots taken to most of the new sheep farms stocked at this time, but they displaced Blackfaces in large numbers on Highland grazings that had recently been stocked with the latter breed. Also they penetrated almost to the heart of the Blackface citadel in the southern uplands. For many years at this period Cheviot ewe lambs and draft ewes commanded extraordinary prices, for the supply was far short of the demand. Until 1860 the tide continued to run in favour of the Cheviot, in which year it very definitely turned. The immediate occasion of the change was a disastrous winter, which showed up strikingly the superior hardiness of the Blackface, but there were other causes, both more important and more permanent. Increasing supplies of Merino wool from Australia began to reach European markets, so that the premium commanded by the finer over the coarser home wools considerably diminished. At the same time the price of mutton and of store sheep rose, and since a given grazing would often carry greater numbers of Blackfaces than of Cheviots, this factor favoured the former breed. At a later date, as is more fully explained below, there was a rapid decline in the number of wethers and a considerable (though not, of course, equivalent) increase in the number of ewes. A good deal of land that was good enough for Cheviot wethers was not fit to carry Cheviot ewes, and therefore many graziers changed over from Cheviot ewe and wether flocks to Blackface ewes. Probably, too, as is indicated below, there was a progressive decline in the quality of the grazings after the first forty or fifty years of sheep farming, so that in fact some Cheviot land deteriorated into Blackface country. Finally, it is sometimes maintained that the hardiness of the Cheviot declined about this time, especially during the period of James Brydon's ascendency among pedigree breeders (1851-76); but this can scarcely have applied to the ordinary commercial flocks of the north, into which there can have passed only a minute trickle of the 'improved' blood.

The extent of the change has been very large. About 1860 Cheviots seem to have constituted between 40 and 50 per cent of the hill sheep in Scotland. Now there are some seven Blackfaces for each Cheviot.

One of the most important developments in management was the introduction of Leicester rams, for crossing with both of the Mountain breeds. Bakewell's Leicester was introduced into Northumberland by the Culleys in 1767, and twenty years later was being tried as a Lowland sheep in many parts of Scotland as far north as Aberdeenshire. It became, in fact, well established as a commercial sheep, in its pure form, in Berwickshire and other counties. It was, of course, realised from the outset that the Leicester was not a hill sheep, and yet its size and early maturing qualities tempted the hill men to make use of it in some way. At first, in the Cheviot Hills, the Lammermoors and other upland regions of the south, the experiment was tried of infusing a little Leicester blood into the ewe flocks, but this was found to be quite ruinous to their hardiness. The systematic crossing of the Mountain breeds with the Leicester, in order to produce butchers' sheep and ewes for low-ground farms, began in the South of Scotland about 1825, and in the course of the next ten years became rather a common practice, especially in the Lammermoors. The following quotation from an account of West Linton Fair is of interest in this connection :[1] "Breeders of Blackface sheep from all quarters come to West Linton to buy Blackface ewe hoggs, and particularly those who have adopted the crossing of Black-faced ewes with Leicester tups. This cross is found to answer so admirably well that many hill farmers are now crossing their entire flocks of Blackfaced ewes. The Lammermuir farmers have adopted this cross, and as the system, carried to the extent to which they pursue it, throws them out of pure Black-faced lambs, they must annually procure a number of pure Black-faced ewe lambs to maintain the number of their standing ewe flock. This system has caused a great increase in the demand for ewe hoggs at West Linton for the past eight or ten years (*i.e.*, since about 1828). It was about twelve or fourteen years ago that the crossing was first attempted on the higher lands of the Langton Estate near Dunse. The vindication of the system is to be found in the 3s. or 4s. per head increased value of the cross to the breeder and also the increased value to the feeder both in wool and mutton. . . . Such is now the demand for black-faced ewe hoggs at West Linton, in consequence of the perseverance of the system . . . that the market is generally cleared of them before six o'clock in the morning at 18s. to 20s. a head, whilst wether hoggs of the same description do not fetch more than 14s. or 15s. a head."[2]

Leicester sheep were introduced into Caithness in 1822 by a Mr Horne, who succeeded Sir John Sinclair as owner of Langwell, and the beginnings of north country half-breds may be dated from a few years later, though it was the middle of the century before systematic production of half-breds was established in the north upon a considerable scale. In the Central Highlands the crossing of old ewes with Leicester rams was fairly common before 1850, and about that time the system began to be applied to complete flocks on the better grazings. Twenty years later it was quite general, and great numbers of Highland grey-faced lambs were available for feeders.

Up till the middle of the nineteenth century there was only one breed of Leicester, and Scottish and North of England breeders still occasionally obtained rams from the south. After that time the Border and English types began to diverge, and after a good many years of controversy they finally split apart, being first provided with separate classes at the Highland Society's Show at Edinburgh in 1869. Several other breeds, apart from the Leicester and Border Leicester, were tried experimentally for crossing purposes, but none seems to have proved satisfactory.

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[1] 'Quarterly Journal of Agriculture,' vol. vii. (1837), p. 534.

[2] This fair was held on the first Wednesday after 25th June.

An episode of some historical interest was the attempt to establish Merino sheep in the North of Scotland. The breed was introduced into England by George III. in 1787. The first consignment proved to be of very inferior quality, but in 1791 a choice small flock was obtained and established on the Royal farm at Kew. In 1804 there was a draft sale of forty-five head, which brought very high prices; in 1808 another choice flock of Spanish sheep was presented to the King, and in 1811 a Merino Society was formed, Sir John Sinclair taking a prominent part in the movement. At least three large flocks were established in the north, one by Sir John Sinclair himself at Langwell in Caithness, another by Patrick Sellar in Sutherland, and a third by Malcolm Laing, M.P., in Orkney. The chief difficulties were that the breed refused to range widely on hill land and could not properly withstand wet soil conditions, suffering greatly from foot lameness; in this connection Sinclair is said, as a last resort, to have equipped his whole flock with leather boots. The reduction of the duty on foreign wool eventually made the keeping of Merinos unprofitable, but meantime a certain amount of crossing had been done, and it is possible that the infusion of Merino blood was sufficient to leave some permanent mark on the characteristics of the north country Cheviot.

DETERIORATION OF GRAZINGS.

From about 1850 onwards many writers refer to the decline in the carrying capacity of Highland grazings, and there appears to be little doubt about the fact; there is, too, a fair measure of agreement regarding the causes. Several writers point out that the old arable patches in the glens, and the sites of the old cattle folds, carried for a long time a fine sweet grassy herbage. On some sheep farms these patches constituted the only green land, and were thus a very important asset. In course of years, however, the heather and other original types of vegetation crept back, and the effects of the cultivation and folding gradually disappeared. Another and probably important factor was the virtual disappearance of cattle from most of the grazings. This has been very generally blamed for the spread of bracken, and, as far as green land is concerned, for the increase of the coarser at the expense of the finer species of grass. One writer alludes to the habit of hill sheep of resting overnight on the high ground, this leading to the transfer of manurial substances from the lower and more fertile ground to barren hill-tops where their value was very largely wasted. It is certainly true that under the older system a proportion of the ground was kept in fairly fertile condition because the whole stock was gathered to the lower and leveller ground every night.

The opposition to heather burning on the part of keepers and sporting tenants constituted another difficulty from the time (about 1860) when grouse began to acquire considerable commercial importance. Heather burning is a practice of great antiquity both in the Highlands and southern uplands of Scotland, there being several references to it in early Scottish law; but it does not seem to have been regularly or systematically carried out until about the middle of the eighteenth century. Graziers have, of course, always maintained that a proper system of rotational burning is equally beneficial to grouse and to sheep, and occasional experiments and demonstrations have confirmed this view;[1] but keepers and sporting tenants have been very reluctant to accept it, and their opposition has at times tended towards the decline in the grazing value of heather land.

It is, of course, obvious that under a system of agriculture which involves the sale of stock, and does not make use of external supplies of manure, there is a continuous drain of fertilising substances from the soil. Phosphates and lime particularly are being constantly removed and not replaced; and while considerable improvements can be achieved by the use of fertilisers on mountain land, such applications are profitable only under very exceptional conditions and on a very small proportion of the total area of Scottish sheep grazings. Complete exhaustion of the soil does not occur because fresh supplies of manurial salts are continually being made available by the weathering of the rocks; in the long-run, however, if a given system is maintained, a balance is arrived at between the withdrawals of manurial substances and their replacement by weathering. If the system is changed the balance is temporarily upset, and the fertility and carrying capacity of the land may rise or fall. There is no doubt that the introduction of sheep farming in the Highlands caused an increased drain upon the land, for the total amount of manurial substances sold off in the form of sheep and wool much exceeded that in the form of store cattle, butter, &c., under the old husbandry. The effect of the change of system was not apparent for a good many years. In Sutherland, for example, it was not appreciable, even upon the oldest sheep farms, until about 1850, or perhaps forty years after the system had been started. In the next thirty years, however, it is said that many of these grazings dropped in carrying capacity to the extent of about 25 per cent.[1] A further increased strain upon the land was involved by the substitution, which occurred later, of breeding ewes for wether stocks; a rough calculation would seem to show that if one breeding ewe replaced two wethers then the annual loss of phosphates from the soil would be somewhat more than doubled.

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[1] See for example Wallace, "Heather and Moor Burning for Grouse and Sheep" (1917), and Sir Hugh Shaw Stewart, "Improvement of Moorlands for Grouse and Sheep," 'Transactions, H. and A. S.' (1916).

DEER FORESTS.

A great deal has been written on the subject of deer forests, and a very full report on the subject was published by a Departmental Committee ten years ago.[2] It is unnecessary, therefore, to make more than a brief reference to the subject. The first effect of the development of sheep farming was a marked decline in the area of land devoted mainly or exclusively to deer, and the number of deer in the country probably reached its lowest between 1780 and 1790. In 1812 there are said to have been only five considerable forests in the whole country. From this time onwards there was a gradual increase, but the rapid displacement of sheep did not begin till after 1880; from this time on wool prices fell, while sheep prices also showed a considerable decline after 1890. The cost of wintering in the low country, too, began to rise, because lowland farmers found it more profitable to maintain permanent flocks than to take in hill sheep for wintering. At any rate, it became increasingly difficult to let, for sheep, the higher land that was suitable only for summering wether stocks. At the same time the demand for deer-stalking increased. By 1873 it was calculated that some 400,000 sheep had been displaced by deer, and this number had increased by a further 80,000 in 1884. A return obtained in 1891 gave the total area of forest at about 2½ million acres, which was probably an under-estimate. By 1912 the acreage had increased to 3·6 million, or nearly one-fifth of the total area of Scotland.

THE DECLINE IN WETHER STOCKS.

Perhaps the most important change in the industry during the whole period of its existence has been the constant tendency in the direction of marketing the output of sheep at ever earlier ages. About 1800 most wethers were kept on the hill ground until they were either four and a half or five and a half years old. Such sheep reached carcass weights of the order of 50-60 lb. By the middle of last century three and a half years had become the usual age for disposal, while by 1880 a fair number were being sold at two and a half. During all this period the northern half of Scotland did not produce sufficient wethers for its needs, and there was still, in 1880, a large trade in wether lambs between Lanark and other centres in the South and the East Grampian district. Finally after 1890 the decline in the value of wethers relative to that of lambs drove everybody who could possibly do so to keep ewe stocks and dispense with wethers altogether. The following table, giving the average prices of Cheviot wethers and Cheviot lambs, as recorded in these 'Transactions,' illustrates the change; the last column expresses the ratio between the two prices—in other words, gives the number of lambs that were equal in market value to one wether :—

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[1] Macdonald, "The Agriculture of Sutherland," 'Transactions, H. and A. S.,' 1880, p. 83.

[2] 'Parliamentary Paper' (Cmd. 1636), 1922.

	Wethers.	Lambs.	Ratio.
1820-29	20/-	8/4	2·40
1830-39	24/4	9/10	2·48
1840-49	27/-	10/6	2·55
1850-59	28/4	12/2	2·32
1860-69	35/2	14/3	2·47
1870-79	43/2	17/6	2·47
1880-89	39/11	16/3	2·39
1890-99	31/1	13/5	2·30
1900-09	30/4	15/1	2·02
1910-19	42/-	23/9	1·77
1920-29	48/7	41/9 [1]	1·14

Wethers have never been separately enumerated in the Agricultural Statistics, but the numbers at different times can be inferred with some degree of approximation; this has been done for some typical counties in a later part of this article.

SMEARING AND DIPPING.

The smearing or salving of sheep is a subject that has now nothing but historic interest. There is, however, a tendency nowadays to think of the practice as a relic of barbarism for which no real basis of reason ever existed; this is far from being true.

Salving was not practised by the Highlanders with the old native sheep, but was a regular part of the routine in the south country sheep farms in the eighteenth century, and was introduced into the north by the immigrant sheep farmers. At this time the choice of materials for the purpose of killing parasites was very limited. Tobacco juice was used for summer dipping, while in the autumn the sheep were salved. The standard material was a mixture, in varying proportions, of wood-tar and butter. The wool was parted at intervals of about two inches, and the dressing applied to the skin with the fingers. Later on, when the supply of cheap Highland butter declined, other types of grease were substituted.

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[1] This figure is explained by the great demand, in recent years, for Cheviot ewe lambs for breeding.

One function of the dressing was, of course, to kill keds and ticks and to prevent scab. But it was almost universally held that the application provided the sheep with an important additional protection against the weather, and hence on the highest grazings the practice survived long after cheap and efficient dips became available. Wool buyers frequently condemned the practice as harmful to the wool, but in fact 'laid' brought rather more than 'white' fleeces when similar sheep were kept under comparable conditions, the salved sheep yielding a greater weight of actual wool, apart from the extra weight added by the dressing. Smearing began to give way to dipping after 1860, and by 1880 had been given up altogether in parts of Angus, Perth and Argyll; at that time, however, nearly three-quarters of the sheep in Sutherland were still smeared, and small quantities of laid wools continued to come on the market until about twenty-five years ago. The chief reason for the cessation of the practice seems to have been that it became, by comparison with dipping, too expensive both in materials and in labour. A man could salve only about a score of sheep per day, and the total cost had risen by 1880 to eightpence or tenpence per head. Against this the cost of dipping was about, or rather over, twopence.

MARKETING.

In the early days of northern sheep farming the output of sheep was marketed mainly by private bargain at large fairs or trysts such as Georgemas Fair in Caithness, the Muir of Ord Market near Inverness, and Doune and Falkirk trysts. These were, of course, in existence as cattle fairs before the Highlands took to sheep farming. In the latter half of last century the system of selling by auction gradually developed, and by the beginning of the present century the old fairs had sunk to negligible proportions.

It is rather the custom at present to disparage our British methods of marketing agricultural produce, but it is difficult to suggest any particular improvement in the system of marketing sheep as it now prevails in Scotland. The great bulk of the output of store and breeding stock is sold at comparatively large special sales, in well-graded lots of a size to suit the convenience of buyers. The sheep are almost invariably exposed by the actual breeder, and the name of the grazing from which they emanate is always published in the catalogue. This is of generally recognised importance in the case of hill sheep, because their subsequent progress depends to a considerable extent on the nature of their native grazings. It seems, indeed, that some improvement is possible in the prevailing methods of wool marketing, little attempt having as yet been made to grade the clips according to quality; but since the grazings are large and the sheep normally all of one breed, the difficulty of very small and very mixed lots of wool does not arise. Much of the wool is sold by auction.

Inverness Sheep and Wool Fair occupies a unique position among British markets. It was started in 1818, has been held annually (in July) ever since and has consistently maintained its importance. No stock is shown, the sheep being sold entirely on the reputation of the flock from which they come, due allowance being made for seasonal conditions as they may have affected the sheep and for fluctuations in the general level of sheep prices. The system, of course, demands a rather intimate knowledge of the various flocks on the part of the buyers. There is something of a disadvantage, too, in the fact that the Fair is held before sheep values have been tested by any considerable auction sales; so that it occasionally happens that the sheep bought and sold at the Fair are found, by the time they are delivered a month later, to be considerably above or below the current market price. Remarkably few disputes, however, arise, and the plan has the great advantage that the sheep are transferred direct from the seller's to the buyer's farm. Wool is dealt with upon somewhat similar lines.

STATISTICAL CHANGES SINCE 1855.

Few reliable statistics are available for the period before 1855, but it can hardly be doubted that over the greater part of the Highlands and the north the sheep population steadily rose during that period. Between 1855 and 1880 total numbers increased by approximately 20 per cent, despite the replacement here and there of sheep by deer. Thereafter there was a period of fairly steady population until about 1895, when in the more purely mountainous region a decline set in which continued until the beginning of the Great War.

In the northern lowland areas, however, the total sheep stock has increased continuously up till the date of the last returns (1931).

The changes in numbers and in the constitution of the sheep population have been far from uniform as between the various districts, a point that may, perhaps, be best illustrated by dealing separately with a few typical counties.

Sutherland is the county now most exclusively devoted to sheep farming, there being, according to the 1931 returns, about thirty-one acres of rough grazings for each acre of improved agricultural land (crops and grass) and about twenty-five head of sheep for each head of cattle. There is also a large proportion of high and exposed ground, and wether stocks were originally very numerous. The changes in the sheep population are indicated below, the figures being based upon three-year averages at intervals of approximately a quarter of a century.

	Thousands.		
	Sheep over 1 year.	Lambs.	Total.
1855-57	154	50	204
1880-82	168	53	221
1905-07	132	67	199
1928-30	142	79	221

In the first period, therefore, the industry expanded by some 8 or 9 per cent, and there was no material change in the composition of the sheep population, there being in both cases a fraction over three sheep in the first class (ewes, rams, gimmers and wethers) for each lamb bred. In the second period there was a fall in the total number of the order of 11 per cent, but breeding increased at the expense of wether stocks, the proportion of older sheep to lambs being about two to one in the period round 1906. The restocking of a certain amount of deer forest during the war, and the further development of breeding flocks at the expense of wethers, are indicated by the last set of figures.

Argyll may be taken next, with over twelve acres of rough grazing for each acre of improved land, and with about fourteen head of sheep for each head of cattle. In one respect the sheep figures form a rather striking contrast to those for Sutherland; the milder climate renders the county more suitable for breeding ewes, and wether flocks have never been very numerous.

	Thousands.		
	Sheep over 1 year.	Lambs.	Total.
1855-57	571	256	827
1880-82	718	295	1013
1905-07	560	279	839
1928-30	475	256	731

Here the industry reached a well-marked peak in the 'eighties of last century, and has since declined; there has been no compensating increase in cattle, but in fact a considerable falling off in cattle numbers also. The county is producing about the same number of lambs as it did seventy-five years ago, but has lost nearly 100,000 head of barren sheep. The improved quality and greater size of the lambs produced has, of course, to be set against the reduced numbers of wethers.

Inverness probably comes nearest to an average sample of the Highland region, having nearly ten acres of rough grazing per acre of improved land and about eleven sheep to each head of cattle. There is a proportion both of mild coastal land and of high inland country. Its development under sheep farming was neither early nor late, coming after that of Dumbarton, Argyll and Perth, but before that of the far north. The corresponding figures are as follows :—

	Thousands.		
	Sheep over 1 year.	Lambs.	Total.
1855-57	430	158	588
1880-82	505	196	701
1905-07	362	180	542
1928-30	331	180	511

Here again the industry reached a peak in the 'eighties, and a considerable decline set in after 1895. The fall in the output of lambs during the past fifty years has been comparatively small—viz., some 9 per cent. The drop in wether stocks cannot be definitely determined since such sheep are not distinguished in the statistical returns from ewe hoggs. It may, however, be calculated that in Inverness about 170 breeding sheep (*i.e.*, ewes, rams and ewe hoggs) are maintained for every hundred lambs bred.[1] Assuming that this figure has remained unchanged during the period in question, the number of wethers must have fallen from some 170,000 in 1880-82 to about 25,000 at present, a decrease of nearly 85 per cent. It is clear that this change occurred mainly before the years 1905-7, the loss since that time being some 31,000.

Caithness.—An entirely different picture is presented by the predominantly lowland counties such as Aberdeen and Caithness. The latter has two and a quarter acres of rough grazing for each acre of improved land, but much of the former class is of comparatively high quality:—

	Thousands.		
	Sheep over 1 year.	Lambs.	Total.
1855-57	50	22	72
1880-82	62	29	91
1905-07	76	51	127
1928-30	101	86	187

The total number of sheep has thus nearly trebled, while the output of lambs has increased nearly four-fold in the seventy-five-year period. In Aberdeen the increase has been still more marked, the total sheep having more than trebled and the output of lambs having risen from 28,000 to 170,000, or more than six-fold. This increase of lowland sheep (mainly half-breds) has reacted on the hill farmer in two ways: in the first place it has rendered lowland winter keep scarce and has thus increased the cost of wintering the ewe hoggs of the Mountain breeds; on the other hand it has created a large demand for Cheviot and half-bred ewe lambs, which have in recent years commanded a high premium over their value as stores. The increase of sheep in these counties has involved no corresponding decrease in cattle; in Caithness the cattle stocks have been about maintained, while in Aberdeenshire they have risen by 30 per cent in the seventy-five years. Neither has there been any material decrease in the area devoted to corn crops. The increased stock carrying capacity of these counties must therefore in the main be set down to the improvement of their grass lands, which is well known to have been very great.

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[1] Actually 133 ewes and 4 rams are kept for each 100 lambs bred; the ewe hoggs have been estimated at 33, or 25 per cent of the number of ewes.

IMPROVEMENT OF SHEEP.

In order to form a fair estimate of the changes in the output of Scottish hill grazings it is, of course, necessary to take into account any changes that have taken place in the size and quality of the sheep produced, and in the weight and quality of their wool. Unfortunately the data for such an estimate are very incomplete.

As regards the weight of wool of the Blackface breed there is no doubt that a very material improvement has taken place. Smith, in his 'General View of the Agriculture of Argyllshire' (1805), quotes a detailed estimate of the income and expenditure of a typical Blackface grazing in that county, and puts the overhead value of the fleeces (including those of ewes, hoggs and wethers) at 10d. each. 'White' (*i.e.*, unlaid) wool was then selling at 7s. per stone of 24 lb. avoirdupois, so that the average weight of the 'white' fleece is assumed to be about 2·8 lb. Naismith, in his 'Agriculture of Clydesdale' (1799), estimates the clip at 4 lb. for wedders, 3 lb. for hoggs and 2·7 lb. for ewes; and it must be borne in mind that for the period in question Lanarkshire had an exceptionally good type of sheep. Archibald,[1] writing in 1884, says that the staple of wool had about doubled in length in the twenty preceding years, and that the average clip had probably risen by 40 per cent, or from 3¼ to 4½ lb.; but either the last figure is an overstatement or else the past fifty years have added a negligible amount to the weight. It must, however, be remembered that Archibald's estimate would include a large proportion of wethers, which give substantially heavier clips than ewes.

A very material increase in weight of carcass has also been achieved, the period of most rapid improvement having been that between 1860 and 1880. Naismith, in extolling the merits of the Lanarkshire Blackface, says, "sometimes a fallow or eild ewe killed from the hill weighs 9 to 10 lb. avoirdupois per quarter"; while Archibald, in 1884, says that eild ewes on good farms commonly average from 15 to 16 lb. per quarter. Since the last-mentioned date attention has been concentrated on improved symmetry and early maturity rather than on any attempt further to increase the size, and butchers whose memories reach back to the 'eighties and 'nineties agree that the shape of the carcass has been immensely improved since those days. In particular the whole frame has been widened, and the gigot has been increased in weight in proportion to the less valuable cuts.

Public auctions of rams began with the establishment of the Lothian Ram Society's sale at Edinburgh in 1864, and

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[1] 'Transactions,' 1884, p. 228.

while prices remained at a comparatively low level for the first few years, from 1871 onwards good sheep began to command high prices, the highest average in that year being £12 for a lot of forty-six head. In 1881 £71 was paid by Howatson of Glenbuck for one of the Overshields lot, and this stood as a record for some years. Other important auction sales have since been established at Lanark, Stirling, Perth, &c., and have exerted a very important influence on the breed.

PROFITS AND LOSSES.

Sheep farming is a highly specialised business, and it might be supposed that profits in it would be subject to rather violent fluctuations according to the price of mutton. Actually profits depend on a considerable variety of factors. Thus the price of wool fluctuates independently of that of mutton; the saleable surplus of sheep varies rather widely according to seasonal conditions; the demand of the lowland farmer for stores depends on the seasonal abundance or scarcity of winter keep as well as upon mutton prices, while his requirements for breeding stock, such as ewe lambs, is affected by the economic position of other branches of his farming—*e.g.*, cereal growing. Also the cost of wintering young sheep in the lowland areas is determined by quite a complex range of factors. In actual fact, if one generalises at all, one may say that depressions in hill sheep farming have been less acute than those which have affected other branches of agriculture in the past century and a half.

The full discussion of the factors that influence prices and profits is beyond the scope of the present article. It may, however, be worth while briefly to indicate the more important fluctuations that have occurred. It has already been said that up till 1820 conditions were on the whole favourable, and that the pioneer farmers as a whole did well. There was, of course, a severe fall in the general price level at this time, and both sheep and wool suffered in common with most commodities. Towards the later 'forties prices rose, and by 1850 the industry was again enjoying a measure of quiet prosperity. The period from 1850 till 1870, although the latter part of it was affected by a number of severe winters, was probably the most prosperous in the history of Highland sheep farming. The actual peak was reached in 1866-7 when the Rinderpest so seriously depleted the cattle stocks of the country that low ground farmers had to offer very high prices in order to get anything wherewith to stock their farms. In 1866, for instance, average Blackface lambs were bringing 17s or 18s. apiece, whereas forty years earlier 5s. to 6s. was regarded as a fair price. Prices remained at a satisfactory level until about 1890, but meanwhile rents and wintering costs had risen, so that really large profits were no longer made. The fall in prices in the 'nineties has already been mentioned. There was no marked revival until about 1905, but before the outbreak of the war prices had recovered to a satisfactory level and good returns remained the rule until 1930.

The greatest risks that the sheep farmer runs are, of course, connected with the weather. There was an old belief that a really disastrous season was to be expected every twenty-second year, and this rule seems to have held over a long period; thus 1772, 1794, 1816, 1838 and 1860 are mentioned as specially bad. The next, however, occurred in 1878-9, and there was another in 1880-1. Up till 1860 losses were occasionally very heavy indeed. Hogg (the "Ettrick Shepherd"[1]), after a tour through a good part of the country in 1816, came to the conclusion that nearly a third of the sheep in the Highlands had perished during the preceding winter; and Macdonald[2] estimated that the average sheep farmer in each of the six bad years mentioned above lost nearly a quarter of his capital.

Losses from weather causes, although of course still occasionally severe, have undoubtedly been mitigated by the improvement of communications; it is now generally possible (although it is still necessarily expensive) to bring supplies of lowland hay to the hill flocks when these are in straits. The first important step in this direction was the opening of the Highland Railway from Perth to Inverness in 1863; and it is worth noting that no disaster on a scale comparable to that of 1860 has since occurred. Perhaps the most important problem for the future is the prevention of diseases such as Braxy and Louping-Ill, which continue to take a very heavy toll of the mountain flocks.

[1] 'Farmers' Magazine,' vol. xviii., p. 144.

[2] "Agriculture of Sutherland," 'Transactions,' 1880.

LOUPING-ILL.

By Dr J. RUSSELL GREIG, Director, Moredun Institute, Animal Diseases Research Association.

THE disease which is variously known as 'Louping-Ill,' 'Trembling' or 'Thwarter Ill,' has been recognised for the last one hundred and fifty years as one of the serious scourges of sheep stock.

Louping-Ill, in its occurrence, seems to be peculiar to Scotland and the North of England. It was first recorded by Duncan in his treatise on the diseases of sheep, published in 1807; in the same year, Hogg, the Ettrick Shepherd, described the disease in his 'Shepherd's Guide.'

Following upon these early records, a number of references to Louping-Ill appear in the literature,[1] but it was not until 1879 that the problem received systematic investigation when the Teviotdale Farmers' Club issued a questionnaire to its members and published a résumé of the answers received. Two years later the Club appealed to the Highland and Agricultural Society to institute research into Louping-Ill. The Society readily responded, and a Special Committee was appointed to undertake the investigation. The first report of this Committee, published in 1882, deals with a comparative geological and botanical survey of the areas in which the disease was prevalent and in adjoining areas in which it did not exist.

It was at that time suggested that a poisonous plant or a fungal parasite might prove to be the causal factor. No plants poisonous to stock were found on the affected areas, but Brotherstone, who made the botanical survey, was impressed by the fact that in many instances the grasses were ergotised, and he suggested that the symptons of Louping-Ill were similar to those of ergot poisoning.

Professor William Williams, who was a member of the Committee, made the observation that a number of conditions representing distinct pathological entities were referred to by shepherds by the name of 'Louping-Ill.' The realisation of this fact must be regarded as a very important step in the investigation of the pathology of the disease.

It was early supposed that the British tick, *Ixodes ricinus*, probably played some part in the production of Louping-Ill. This supposition was supported by strong circumstantial evidence in that the disease appeared in its greatest incidence during those seasons when ticks were most active, and it was always found in areas which were tick infested, whereas it did not occur in other and adjoining areas which were tick free. Williams made very acute observations on these matters. He further recognised that the disease appeared to bear no relationship to the degree of tick infestation, because, while heavy tick infestation could occur on sheep which remained unaffected, sheep suffering from Louping-Ill were sometimes very lightly infested.

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[1] For a full review of the literature on Louping-Ill, the reader is referred to a paper by W. A. Pool, 'Vet. Jour.,' 1931, lxxxvii., 177.

He believed that the disease was due to what he described as a 'mould' which was capable of being carried by the tick, and that either the parasite could convey the disease by inoculation or that infection occurred by the sheep swallowing infected ticks.

In a third report, issued in 1884, the Special Committee of the Highland and Agricultural Society recorded the results of further comparative study of the pastures on Louping-Ill and non-Louping-Ill areas. They found that, whereas on non-Louping-Ill pastures the *Juncaceæ* (rushes) and *Cyperaceæ* (sedges) predominated, on Louping-Ill farms, especially on those parts in which the disease was prevalent, the predominant flora were represented by grasses. It was considered that this fact supported the theory that the disease was due to ergot poisoning, since, although "both districts might be said to be 'rough,' the two were widely different, as the predominating plants on the one were not parasitised by ergot, while those on the other were so."

Klein, at the instance of the Duke of Northumberland, carried out an investigation in 1893. It would appear, however, that he included as the subjects of his research sheep which were affected with diseases other than Louping-Ill, and as a result, was seriously misled by his pathological findings.

He did not believe that the tick played any part in the production of the disease, but described a bacillus which he had obtained from the cerebro-spinal fluid. This organism he believed to be present in the soil of affected pastures. Attempts to transmit the disease to healthy sheep with cultures of the organism were, however, unsuccessful.

In 1894 M'Fadyean published the results of his primary researches upon the disease. He amplified the earlier observations of Williams to the effect that a number of conditions had been grouped under the name of Louping-Ill, and he recognised that until these various conditions could be individually identified, progress in the further investigation of the disease would be very seriously hampered.

In a critical survey of Klein's work he showed the danger of attempting bacteriological or other investigation of the disease until the entity known as Louping-Ill could be precisely determined. M'Fadyean, therefore, paid special attention to this problem, and in his report differentiated a number of conditions confused with Louping-Ill. The following is a quotation :—

> " Without attempting to decide which of them has the best claim to the name, I feel warranted in saying that the following are the principal morbid conditions at the present time grouped under the head of Louping-Ill :—
>
> 1. Pyæmic spinal meningitis, caused by pyogenic bacteria.
> 2. Gastritis and enteritis from indigestible substances (wool, sand, dried grass) in the stomach or intestines.
> 3. Disorders of brain functions, paralysis and general weakness, with, in some cases, excess of cerebro-spinal fluid in the cranial cavity, but without gross lesions in any of the organs of the body.
>
> The first two of these conditions cover most of the cases of Louping-Ill in lambs, and the third includes the bulk of the cases in adult sheep. The cause or causes of the last of these groups of cases have not yet been satisfactorily determined, but all the experiments hitherto made indicate that these cases are not bacterial or transmissible by inoculation."

Meek and Greig Smith (1896) held the opinion that the cause of Louping-Ill was represented by soil organisms, and that the tick was capable of becoming infected with these and of transmitting them during its periods of engorgement on the sheep. A number of experiments designed to test this hypothesis was carried out, but proved negative.

In 1900 the then Board of Agriculture and Fisheries appointed a Departmental Committee to investigate Louping-Ill and Braxy in sheep. The Committee was presided over by the late Professor Hamilton; Sir Robert Greig, the present Secretary of the Department of Agriculture for Scotland, acted as Secretary. The Committee did much useful work (report published 1906), including the establishment of the fact that no marked microscopic lesions could be associated with Louping-Ill.

Professor Hamilton believed that a sporulating anærobic bacillus, which he obtained from the peritoneal fluid, was the causal organism. During the last thirty years the science of bacteriology has made very rapid progress, and Hamilton's association of this organism with the cause of the disease probably resulted from the lack of those refinements in bacteriological technique which are at our disposal to-day.

In 1914 an investigation was carried out by M'Gowan and Rettie. They gave a very interesting and informative account of the histo-pathology of the brain and spinal cord, and described lesions which we now know to be characteristic of Louping-Ill. With the object of determining whether the infective agent was present in the central nervous system they injected intracerebrally into healthy sheep preparations of brain emulsified in cerebro-spinal fluid which were obtained from typical cases of the disease. Only two such experiments, however, were carried out, and both proved negative.

In 1915 M'Gowan arrived at the conclusion that "true Louping-Ill in its different varieties" is caused by a micro-organism which he named *Bacillus bipolaris septicus ovium.* He included under the name of Louping-Ill:—

> "'Braxy' or 'Sickness' and 'Grass Sickness,' which are held to be very acute forms of the disease. The disease 'Milk Sickness' in lambs is considered also to be a variety of this same disease."

He formed the opinion that these diseases could all be considered as essentially of the same nature, in that he believed them to be caused by the same organism—the *Bacillus bipolaris septicus ovium.*

> "Epidemiologically they are considered to be different, in that while Braxy is usually produced by eating rapidly large quantities of succulent material covered with hoar-frost, true Louping-Ill, in most of its varieties, is considered to be caused chiefly by exposure to extreme degrees of temperature within a short interval. 'Milk Sickness' is considered to be, in a restricted degree, caused by contagion. The grass tick is held to be responsible for the production of the bulk of the cases of pseudo Louping-Ill. Navel-Ill, with its attendant joint-ill, contributed some cases; while aggravated wool-ball, injuries, &c., add a few to the sum total included in this term."

These views are now known to be erroneous.

M'Gowan seems to have placed no importance upon the theory that the tick acted as a means of transmitting the disease.

Stockman, who undertook a series of very important researches on Louping-Ill, published the results of his primary investigation in 1916. Realising the danger of selecting as his experimental material cases of diseases other than Louping-Ill, he set up a rigorous standard of conditions under which his field material was to be obtained. These conditions were as follows:—

(*a*) "The sheep or lambs came from farms notoriously affected with Louping-Ill.

(*b*) They had been suddenly attacked by a nonfebrile or feebly febrile disease, characterised by symptoms of stupor or nervous excitability, followed quickly by paralysis of the fore or hind extremities or both.

(*c*) The disease had appeared in what is recognised as the Louping-Ill season.

(*d*) On post-mortem examination no macroscopic or microscopic lesions of any recognised disease which could account for the symptoms were present.

(*e*) In the internal organs (bowels excepted) of animals slaughtered at the point of death, or in those examined immediately after death, no micro-organisms were discoverable by microscopic examination, and none were cultivated from them by the ordinary methods of the laboratory."

He recognised that, while this classification might exclude some cases of true Louping-Ill, it excluded many conditions with which Louping-Ill could be confused.

He dealt rather fully with the tick theory of transmission, and his observations in this regard may be quoted *in extenso* :—

> " The suggestion that ticks play some part in producing the disease is a very old one. Some investigators have given the suggestion very scant consideration, being intent on establishing another cause of their own creation ; some others, again, claim on quite inadequate grounds to have established beyond dispute that Louping-Ill is a tick-borne disease.
>
> The circumstantial evidence which led to the suggestion is strong, and it was, therefore, entitled to the most careful consideration and investigation. It has been observed—
>
> (1) That ticks always infest the pastures where Louping-Ill is present. It has been asserted, however, that the disease sometimes occurs on land where there are no ticks, and had this been established, the tick theory might be rejected ; but the evidence in support of the assertion is not strong, and it is further vitiated by the absence of reliable information concerning the diagnosis. It is certainly beyond dispute that the disease may be unknown on land which is infested by ticks, but this does not invalidate the tick theory, as it may only mean that the ticks on such pastures are not infective, or in other words, have never had the opportunity of becoming carriers of the infective agent of the disease by meeting with diseased sheep.
>
> (2) That Louping-Ill is a seasonal disease occurring

> chiefly in April, May and early June, and to a less extent in the autumn.
>
> (3) That ticks are prevalent in these seasons. It has even been asserted, however, by some of those who claim to have investigated the disease seriously, that ticks are absent in the summer months. It is a fact that ticks, especially the fully engorged and, therefore, more noticeable females, are more prevalent at the times mentioned; but the assertion that ticks are absent at other times must be due to faulty observation and defective knowledge of the life-cycle and habits of the ticks.
>
> The fact is, there is no time of the year in which at least some ticks may not be found on sheep running on tick-infested pastures, and a study of the life-cycle and habits of the tick fully accounts for this fact."

Now, if the tick acted as a vector in the transmission of the disease, it was reasonable to assume that the causal agent might be a protozoan parasite, since such parasites are frequently conveyed through the medium of insect or arachnid hosts, and Stockman and his co-workers, in their search for a protozoan parasite, made extensive examinations of preparations of tissue and tissue fluids obtained from sheep in all stages of Louping-Ill. The result of all these examinations at this stage of the investigation, however, proved negative.

A number of experiments designed to test the tick theory was carried out, but Stockman at this stage of his research concluded that the experimental evidence was against the view that Louping-Ill was carried by ticks. He recognised, however, that his results were incomplete, and left the question of tick transmission an open one.

In 1918 Stockman published the results of further investigations. He described microscopic lesions occurring in the central nervous system, and many of his descriptions, like those of M'Gowan and Rettie, can be recognised as those of lesions now definitely associated with Louping-Ill.

Stockman found that if ticks were allowed to engorge on cases of Louping-Ill, and then, after having moulted, were allowed to engorge on healthy sheep, they were capable of setting up a febrile affection. This disease condition could be further transmitted from sheep to sheep by withdrawing blood at the height of the fever and injecting it into healthy sheep. It was also found that ticks allowed to engorge on these experimental cases during the febrile reaction could, after moulting to the next stage, cause a febrile reaction in the sheep upon which they were put to feed. He observed that infection acquired by female ticks in this way could be transmitted through the eggs to the larvæ.

He found that infective material proved no longer infective when passed through bacterial filters, and concluded that the infective agent, whatever it might be, was therefore large enough to be capable of being seen by the microscope.

He described certain intracellular bodies which were present in smears of lymph glands and spleen, and similar bodies which also occurred within the leucocytes in blood collected from cases of Louping-Ill. He appears to have attached considerable importance to the presence of these so-called 'chromatin bodies,' but advisedly left the question of their possible causal relationship to the disease unanswered.

As part of his conclusions he stated :—

> "The disease which has been produced experimentally by larval ticks—*Ixodes ricinus*—from females off sheep affected with Louping-Ill and by adults which had fed as nymphs on infected sheep, and by the inoculation of gland juice and blood from such sheep, is, in fact, Louping-Ill. To conclude otherwise would involve the following further conclusions which are very difficult of acceptance :—
>
> (*a*) That the experimentally produced cases with conclusive symptoms and lesions [described in the earlier part of his work] must be disregarded.
>
> (*b*) That there is a disease of sheep other than Louping-Ill characterised by similar microscopic lesions and by similar varying symptoms which is tick-borne and inoculable, and that sheep suffering from acute and typical Louping-Ill in the field are invariably attacked at the same time by this other disease, since inoculation of their gland juice or blood constantly produces it."

In the light of the results of recent investigations about to be described, there is now little, if any, doubt that Stockman had fallen into the very error which he took such care to avoid —namely, that he included among his experimental material a disease other than Louping-Ill.

In his conclusions, just quoted, he recognises that, if the disease which he experimentally produced be not Louping-Ill, then he is dealing with another disease which, in its histo-pathology, its symptoms, its transmissibility by ticks, and its possession of a similar seasonal incidence, possesses a remarkable number of features coincidental with Louping-Ill. In point of fact, our present research has shown that a disease other than Louping-Ill possesses in common with it all the features postulated by Stockman, with the exception of its histo-pathology; but with such evidence as Stockman had at his disposal, he was fully justified in reaching his tentative conclusions; indeed, his lucid reasoning upon the evidence, such as it was, commands admiration. In other words, it might be said that his premises which appeared so real were false, while his reasoning upon these premises was sound.

In 1928 the Animal Diseases Research Association undertook a systematic investigation of Louping-Ill at the Moredun Institute under the direction of Mr W. A. Pool (in collaboration with the writer's present colleagues, Mr A. Brownlee and Mr D. R. Wilson.)

Attention had been drawn to the popular belief that Louping-Ill occurred in pigs, and a number of writers on the subject had stated that pigs were susceptible to the disease. Previous to the commencement of systematic research, a set of experiments was carried out for the purpose of ascertaining whether pigs were, in fact, susceptible and could thus serve as useful test animals. Various tissues derived from cases of Louping-Ill were administered to pigs, with negative results.

A suspension prepared from the spinal cord of affected sheep was inoculated subcutaneously into another pig. In the course of fourteen days this pig developed an acute febrile affection accompanied by nervous symptoms. The animal was unable to rise, the muscles of the neck became partially paralysed and violent tremors involving the whole body were exhibited. Recovery was rapid after the acute stage of the illness had passed, but the paralysis of the neck muscles remained.

This latter experiment was of distinct interest and considerable significance, since it showed that it was possible to set up in the pig, by means of the inoculation of material derived from the central nervous system, a condition which, in its clinical manifestation, bore some similarity to Louping-Ill of the sheep.

In the course of the subsequent work in 1929 it was found that by inoculating material obtained from the central nervous system of cases of Louping-Ill directly into the brain of healthy sheep and pigs, definite disease could be produced. In both sheep and pigs there was a distinct incubative period followed by a temperature reaction, and, in a proportion of cases, symptoms referable to central nervous system involvement developed at about the fifth day.

The report by Pool, Brownlee and Wilson of the 1929 season's work at the Moredun Institute ('Jour. Comp. Path. and Ther.,' 1930, xliii., 253) recorded the successful regular transmission of the disease to sheep and pigs by the intracerebral inoculation of material prepared from the brain and spinal cord of affected sheep.

It was also found that the infective agent was usually, but not constantly, present in the mesenteric lymph glands and spleen; it was usually present in the blood at some stage of infection, but was not demonstrated in cerebrospinal fluid, aqueous humor, bone marrow, liver or skin.

Infection was also produced by intra-spinal, intra-sciatic, intra-ocular, intravenous and subcutaneous inoculation, and by ocular instillation, but was not produced by intramuscular, intradermic and endermic inoculations, intra-nasal instillation or by administration by mouth.

It is probable that Stockman, in his inoculation experiments, succeeded on several occasions in transmitting the disease experimentally, but it would appear that he did not regard the central nervous system as the principal focus of the infecting agent. The results of the 1929 work at the Moredun Institute demonstrated that the infecting agent was, in fact, present in the central nervous system, and that by the adoption of the intracerebral route, the transmission of the disease by the inoculation of tissue derived from the central nervous system could be regularly effected.

These findings constituted a very important advance, and formed the basis of the subsequent work about to be described, which, in our attempts to elucidate the problem of Louping-Ill, has permitted us to reach definite results.

In the spring of 1930, upon Mr Pool's relinquishing his part in the investigation, the work was resumed under the direction of the present writer.

Collection of Experimental Material.

As a preliminary to the 1930 season's work, it was necessary to obtain material from cases in which the presence of the disease could be accurately diagnosed.

The Institute's motor field-laboratory was therefore stationed on the farm of Gilmanscleuch in the Ettrick valley, and from it were forwarded to the Institute the brains of five sheep in which there was reason to believe that death had occurred from true Louping-Ill.

Two of the writer's colleagues, Brownlee and Wilson, have shown that the pathology of the disease is represented in a meningo-encephalo-myelitis (inflammation of the substance and coverings of the brain and spinal cord). This work has proved of great value, as it has enabled us to verify the production of the disease in our experimental animals.

It had been brought to the writer's knowledge that the condition in parturient and lactating ewes, known as 'Lambing Sickness,' was frequently confused with true Louping-Ill. This condition has recently been found to be closely allied to Milk Fever in cows, and to be due to an acute calcium deficiency. Since four of the five cases of suspected Louping-Ill had been seen before death, samples of the blood of these were submitted for calcium analysis. The following table summarises the results :—

TABLE I.

Case No.	Description of Animal.	Mgs. Ca. % Serum.	Histo-Pathology of Brain.
1	Hogg	8·60	Encephalo-myelitis
2	Lactating parturient ewe .	6·53	Normal
3	Lactating ewe . . .	9·40	Normal
4	Lactating ewe . . .	9·00	Normal
5	Hogg	..	Encephalo-myelitis

It has been found that in Louping-Ill the blood calcium concentration is relatively normal (average: 9·50 mgs. per cent), but it will be observed that in Case No. 2, that of a lactating parturient ewe, the blood calcium concentration was low, and from this (and other features of the case) it is permissible to assume that the condition was that of Lambing Sickness.

It will be observed that lesions of encephalo-myelitis were present in only two cases, Nos. 1 and 5, and that these were the only cases in which an infective agent was subsequently demonstrated in the central nervous system (Table II.).

TABLE II.

Case.	Test Animals.	Inoculum.	Method of Inoculation.	Result.
1	A	Brain and cord emulsion	Intracerebral	T.R. : T.L.I.
	B	Brain and cord emulsion	Intracerebral	Negative
	C	Cerebro-spinal fluid	Intracerebral	Died *
	D	Brain and cord emulsion	Subcutaneous	T.R. only
2	A	Brain and cord emulsion	Intracerebral	Negative
	B	Brain and cord emulsion	Intracerebral	Negative
	C	Cerebro-spinal fluid	Intracerebral	Negative
	D	Brain and cord emulsion	Subcutaneous	Negative
3	A	Brain and cord emulsion	Intracerebral	Negative
	B	Brain and cord emulsion	Intracerebral	Negative
	C	Brain and cord emulsion	Subcutaneous	Negative
4	A	Brain and cord emulsion	Intracerebral	Negative
	B	Brain and cord emulsion	Intracerebral	Negative
	C	Brain and cord emulsion	Subcutaneous	Negative
5	A	Brain and cord emulsion	Intracerebral	T.R. : T.L.I.
	B	Brain and cord emulsion	Intracerebral	T.R. : T.L.I.
	C	Brain and cord emulsion	Subcutaneous	Negative

* Death occurred three days after inoculation from causes unconnected with Louping-Ill.

T.R. = Thermal reaction. T.L.I. = Typical Louping-Ill.

ARTIFICIAL TRANSMISSION OF THE DISEASE.

The experiments in transmission, which were carried out in 1929, were repeated, and it was found that these could be amply confirmed.

The virus from Case No. 1 was passaged serially through twenty-three generations, and that from Case No. 5 was passaged serially through five generations. The serial passages were then concluded.

It was found that the development of the clinical symptoms of Louping-Ill was always preceded by a thermal reaction.

The normal temperature of the sheep varies within a remarkably wide range, but the limited normal range has been determined arbitrarily as from 103° F. to 105° F.

A thermal reaction was considered to have occurred when the rise in temperature was gradual, sustained and reached a point above 106° F.

It was found that the intracerebral inoculation of infective material was usually followed by a period varying from two to three days in which the temperature was normal; thereafter a thermal reaction occurred, which reached its acme about the fourth to fifth day, after which there was a rapid defervescence; and in those cases in which the thermal reaction was followed by symptoms referable to nervous disturbance, these appeared on or about the fifth or sixth day. Most of these cases terminated fatally, death occurring at about the sixth or seventh day after inoculation.

Approximately 12 per cent of cases inoculated intracerebrally with infective material proved refractory, in so far that the thermal reaction was not followed by appreciable clinical disturbance.

It was conceivable that symptoms clinically resembling those of Louping-Ill might be set up artificially by injecting fluid into the brain, and in such case the condition which we had produced by our intracerebral injections might have been due to the injection itself, and not to any infective agent.

A group of sheep was therefore injected with emulsions prepared from the brains of normal sheep, but this injection was followed by no symptoms resembling those of Louping-Ill.

THE CAUSE OF LOUPING-ILL.

Attention was now turned to the nature of the infecting agent. All attempts to demonstrate the presence of visible micro-organisms in the infective material had failed, and since, if we except the 'chromatin' bodies described by Stockman, no organisms resembling protozoon parasites had been found in the blood, it was an evident possibility that the infective agent was a filtrable virus.

This view was further supported by the histo-pathological findings, the lesions in the meningo-encephalo-myelitis resembling those caused by certain recognised neurotropic viruses.

It was therefore resolved to test the filtrability of the infective agent, and portions of brain obtained from sheep experimentally infected with Louping-Ill were forwarded to Professor T. J. Mackie of the Department of Bacteriology, University of Edinburgh, who kindly supplied us with Berkefeld filtrates prepared from this material. We tested the filtrate and found that it was still infective. This meant that the infective agent was so minute that it could pass through the pores of a porcelain filter. It therefore belonged to the group of infective agents known as filtrable viruses. This, in itself, was evidence that the infective agent was incapable of being seen by the most powerful microscope.

We have since carried out numerous filtration experiments, and have positively determined the cause of the disease to be an ultra-visible filtrable virus.

INFECTIVITY OF THE BLOOD DURING THE FEBRILE STAGE OF THE DISEASE.

In a series of experiments it was found that blood serum collected during the febrile phase of Louping-Ill was infective when inoculated intracerebrally. This finding confirmed the results of similar experiments in 1929.

INFECTION BY METHODS OTHER THAN INTRACEREBRAL INOCULATION.

At this stage an endeavour was made to test the infectivity of the virus when introduced into the body of the sheep by means other than intracerebral injection.

It was found that when an injection was made subcutaneously or intradermally, or when material containing the virus was blown into the nostrils in the form of a fine vapour, a temperature reaction occurred, but this was not followed by the typical symptoms of the disease: after the febrile phase the sheep made a complete recovery.

In 1929 two of the writer's colleagues (Brownlee and Wilson) had observed that sheep which had developed only a thermal reaction after subcutaneous inoculation, subsequently resisted an intracerebral inoculation with infective material.

Since we had found that the blood at the height of the fever was infective, it appeared reasonable to assume that the rise in temperature following infection by these various methods might represent a true reaction to Louping-Ill which, in turn, might give rise to an active immunity. The following experiment was therefore carried out :—

EXPERIMENTS IN IMMUNITY.

Four sheep which had received a subcutaneous injection of Louping-Ill virus were grouped with three control sheep, and all seven were inoculated intracerebrally with Louping-Ill virus. As a result it was found that the three control sheep died from typical Louping-Ill, whereas the four sheep previously injected subcutaneously remained normal.

From this it was inferred that a subcutaneous injection of virus was followed by immunity.

This experiment was then carried a stage further. Eleven sheep which received an intra-nasal insufflation with virus, together with two sheep which were inoculated intradermally and six which had received a subcutaneous injection, were gathered. Two clean (control) sheep were added to these, and all twenty-one animals were then inoculated intracerebrally with infective brain suspension. From the following table it will be seen that, as a result, the two control sheep both developed typical Louping-Ill, whereas, with the exception of four cases which developed a slight temperature reaction, no symptoms were noted in the nineteen which had previously been subjected to a mild attack of the disease.

It was thus proved that the virus of Louping-Ill was capable of eliciting a powerful immunity.

[TABLE III.

TABLE III.

Sheep No.	Primary Inoculation.		Interval between Inoculations (in days).	Secondary Inoculation (Intracerebral).	
	Nature of Primary Method of Inoculation.	Temperature Reaction following Primary Inoculation.		Temperature Reaction	Other Clinical Symptoms.
942	Simple Nasal Insufflation	+	26	+ Mild	None
965	,, ,, ,,	+	19	+ Mild	,,
*939	,, ,, ,,	+	33	+ Mild	,,
*940	,, ,, ,,	+	33	+ Mild	,,
944	,, ,, ,,	+	26	—	,,
946	,, ,, ,,	+	26	—	,,
964	,, ,, ,,	+	19	—	,,
966	,, ,, ,,	+	19	—	,,
967	,, ,, ,,	+ (Mild Nervous disturbance)	19	—	,,
962	Nasal Insufflation after Scarification	+	19	—	,,
968	,, ,, ,,	+	19	—	,,
*953	Intradermal Inoculation	+	26	—	,,
*958	,, ,,	+	26	—	,,
905	Subcutaneous Inoculation	+	19	—	,,
906	,, ,,	+	19	—	,,
907	,, ,,	+	19	—	,,
911	,, ,,	+	19	—	,,
955	,, ,,	+	19	—	,,
957	,, ,,	+	19	—	,,
975	No previous Inoculation (Control)	0	—	+	Typical Louping-Ill. Death occurred in both cases.
977	,, ,, ,,	0	—	+	

* Filtered brain emulsion.

It will be observed that Intracerebral Inoculation produced Louping-Ill only in those sheep which had not previously received infection. From these results it was concluded that an active immunity to the disease may be established experimentally by Nasal Insufflation, and by Intradermal Inoculation as well as by Subcutaneous Inoculation.

SPECIFICITY OF IMMUNITY TO THE VIRUS.

Since it was conceivable that the results of the above-described experiments could be explained on the ground that the immunity induced represented merely an immunity to the inoculation of cerebral tissue, and was not specific to the virus, the following experiments were devised :—

Two sheep, which had remained unaffected when previously inoculated intracerebrally with brain emulsion prepared from non-Louping-Ill cases, and one sheep which had remained completely normal when previously inoculated subcutaneously with material from a non-Louping-Ill case, were now inoculated intracerebrally with infective brain suspension. In each case a thermal reaction followed by typical symptoms of Louping-Ill developed.

As a control to this experiment, four normal sheep were inoculated subcutaneously with infective brain emulsion. After an interval of forty-three days these four sheep were inoculated intracerebrally with infective virus, and all four remained completely unaffected.

From this it was inferred that the immunity induced was specific to the virus and did not merely represent an immunity to the inoculation of cerebral tissue.

DURATION OF THE IMMUNITY.

In order to determine whether the active immunity produced by the subcutaneous injection of the virus was of prolonged duration, two sheep which had received a subcutaneous injection of infective material on 5th December 1929 were inoculated intracerebrally on 10th October 1930, an interval of 322 days. In each case the result of the intracerebral injection was completely negative.

Four other sheep received a subcutaneous injection on 31st October 1929, and this was followed by an intracerebral inoculation on 20th November 1929, with completely negative result.

These four sheep were again inoculated intracerebrally with virus on 23rd October 1930, that is, 337 days after the previous intracerebral inoculation, again with completely negative result.

It is therefore concluded that the immunity persists for at least eleven months.

EXPERIMENTS IN TICK TRANSMISSION.

Since there was strong circumstantial evidence that the tick, *Ixodes ricinus*, played an important rôle in the transmission of the disease, several investigators had previously attempted to test the matter, but their results proved either negative or inconclusive. It is probable, for instance, that Stockman did, in fact, succeed in transmitting the disease by means of tick infestation, but the evidence was so meagre and indefinite that no firm conclusion could be drawn.

It was an evident possibility that in attempts to transmit the experimental infection by infestation of sheep by ticks, only a small number of test animals would develop typical clinical symptoms of Louping-Ill, and that the majority would suffer only a mild infection represented, perhaps, by a transient fever.

In view of our findings that an active immunity could be produced by injecting the virus intradermally, thus in a manner imitating infection by tick-bite, it was hoped to determine whether infection by tick-bite could actually occur by first infesting clean sheep with ticks collected from Louping-Ill land, noting the temperature reaction and later testing for the presence of immunity in these sheep by subsequently injecting the virus intracerebrally.

The following experiments, carried out mainly under the supervision of Dr J. MacLeod, Entomologist at the Institute, were therefore planned:—

Two clean sheep were infested with numerous nymphs and larval ticks, gathered from infected pastures during the height of the Louping-Ill season. Neither of these sheep developed Louping-Ill, but on the fourth day after infestation both showed thermal reactions.

From one of these sheep blood was drawn during the febrile phase and inoculated subcutaneously into a clean sheep—which we shall call Sheep 'A.' No symptoms of Louping-Ill were produced in this sheep other than a thermal reaction, which again developed on the fourth day.

From this sheep—Sheep A—blood was taken during the febrile phase and inoculated subcutaneously into another clean sheep—Sheep B. Again a thermal reaction was obtained at the fourth day, but no other symptoms of Louping-Ill developed.

In order to determine whether immunity had been developed, Sheep A was then inoculated intracerebrally with virus—sixteen days after the subcutaneous injection and eight days after the temperature had returned to normal. This resulted in the development of a typical thermal reaction, followed by the typical symptoms of Louping-Ill.

Sheep B was inoculated intracerebrally with virus eleven days after the subcutaneous inoculation and six days after the temperature had returned to normal. A thermal reaction, followed by typical symptoms of Louping-Ill, also developed in this case.

The two original tick-infested sheep were also injected intracerebrally with virus ten days after each had returned to normal; both developed typical Louping-Ill.

From one of the original tick-infested sheep blood was also taken nine days after the temperature had returned to normal, and inoculated subcutaneously into a cleen sheep—Sheep C. A thermal reaction developed in the inoculated sheep.

From this sheep—Sheep C—blood taken during the febrile phase was inoculated intracerebrally into two clean sheep. In one of these—Sheep D—a thermal reaction developed; the other remained normal.

Forty and thirty-four days respectively after their primary subcutaneous inoculation, Sheep C and Sheep D were then inoculated intracerebrally with virus; both developed typical Louping-Ill.

From another tick-infested sheep, which developed a thermal reaction but no other symptoms of Louping-Ill, blood serum taken during the febrile phase was inoculated intracerebrally into a clean sheep—Sheep E. A thermal reaction, but no other symptoms of Louping-Ill, followed. Thirty-three days later Sheep E received an intracerebral injection of virus and developed typical symptoms of Louping-Ill.

As a control to the above inoculation experiments, two sheep were respectively inoculated subcutaneously with blood from two healthy sheep. In each case no thermal reaction was shown, the sheep remaining completely normal.

As a control to the infestation experiments with ticks collected from infected pastures, two sheep were massively infested with clean larval ticks—that is, larvæ bred from females which had engorged on healthy sheep. Both animals remained completely normal.

The results of these experiments were somewhat unexpected. It had been supposed that, since the sheep developed marked febrile reactions as the result of the infestation of ticks obtained from infected land, the febrile reactions would probably represent Louping-Ill, and the sheep would be immune to the virus of Louping-Ill when this was subsequently introduced by intracerebral injection. This, as has been shown, was not the case. Although a marked thermal reaction had been elicited by tick infestation, the sheep were still quite susceptible to Louping-Ill virus.

It appeared, therefore, that the febrile reaction was due to some factor other than Louping-Ill virus, and since the disease was capable of transmission from sheep to sheep, it further appeared that this causal factor was a living infective agent.

As an alternative explanation, it could be postulated that the infection did, in fact, represent that of true Louping-Ill, but that this hypothetical Louping-Ill infection was so slight as to be insufficient to protect against subsequent intracerebral injection of virus. This view was, however, discounted by the evidence that in each case a marked thermal reaction had been obtained consequent upon each tick infestation.

From the above observations it could be inferred that—

(*a*) A febrile condition, distinct from Louping-Ill but conveyed by tick infestation, occurred during the Louping-Ill season—that is, a 'Tick Borne Fever.'

(*b*) The temperature reactions which were observed by Stockman to follow infestation of sheep with ticks gathered from Louping-Ill pastures were conceivably due not to Louping-Ill but to Tick Borne Fever.

(*c*) Since tick-bite, even such as that which occurs during a heavy infestation, introduces a relatively small volume of virus intradermally, it seemed possible that if ticks were carriers of Louping-Ill, then some, as yet unknown, factor predisposed infested sheep to Louping-Ill infection.

(i) It was recognised by shepherds that heavy tick infestation in Louping-Ill areas has a marked debilitating effect upon the sheep, and it was considered possible that tick infestation might itself predispose the animals to attack.

(ii) It was conceivable that the virus of Louping-Ill might be activated into pathogenicity by another and distinct pathogenic factor, such as that of Tick Borne Fever.

For a more extended report of the investigations carried out in 1930, reference may be made to the paper by Greig, Brownlee, Wilson and Gordon (' Vet. Rec.,' 1931, xi., 325).

The arrangement of the programme for 1931 was designed with the primary object of obtaining definite answers to the following questions :—

1. Are sheep, which are artificially immunised to experimentally produced Louping-Ill, protected against natural Louping-Ill infection ?
2. Are sheep immune to Louping-Ill susceptible to Tick Borne Fever ?
3. In the event of temperature reactions occurring in the test sheep exposed to infection in the field, do the reactions bear relationship in time or in degree to tick infestation ?
4. Is tick infestation, Louping-Ill and/or Tick Borne Fever associated with loss of body weight ?
5. Is the character of the Tick Borne Fever temperature reaction distinct from that of Louping-Ill, and can the diseases be distinguished clinically ?
6. Can Louping-Ill be transmitted by tick-bite ; if so, what is the nature of the factor, if any, which predisposes the infested sheep to infection ?

With the object of obtaining answers to these questions, it was resolved to carry out a large-scale field experiment in 1931.

It is proposed to give here only a brief résumé of the main facts which have emerged from this field experiment. Detailed records will be found in a report by the writer's colleagues —W. S. Gordon, A. Brownlee, D. R. Wilson and J. MacLeod —who carried out this part of the work.

Field Experiment, 1931.

Preliminary.

It is believed by flockmasters that, while the Louping-Ill mortality incidence among sheep bred and reared on Louping-Ill land is about 2 per cent or 3 per cent, the introduction to a Louping-Ill district of sheep reared on 'clean' land may be followed by a mortality ranging from about 17·6 per cent to 39·2 per cent.—(Stockman.)

Since subcutaneous injection of living Louping-Ill virus possesses prophylactic value against experimental infection, it was reasonable to assume that if groups of 'protected' and 'unprotected' sheep from clean land were placed on infected pasture, a considerable number of fatalities from Louping-Ill would occur among the 'unprotected' controls, while the 'protected' group would remain relatively immune.

A group of approximately 100 hoggs was obtained from an area in which Louping-Ill did not occur, and after half had been artificially protected against Louping-Ill, these and the remaining " unprotected' sheep were transferred to a Louping-Ill district during the period April, May and part of June (the season during which ticks are most abundant, and during which Louping-Ill occurs in its maximal incidence).

Although our previous experiments had furnished no evidence that the subcutaneous injection of living virus was capable of producing serious injury, it is well known that the use of vaccines containing live virus is not infrequently attended by serious, and even fatal, reactions on the part of the vaccinated animal. It was therefore considered desirable to undertake a preliminary experiment on a limited number of sheep, each group of which received graded doses of the live vaccine. The result of this experiment indicated that 10 c.c. of a 1 in 1000 dilution of powdered brain emulsion was a safe and effective immunising agent. This preparation was therefore employed; but in actual practice it proved highly dangerous, and many of the sheep inoculated not only became seriously affected with Louping-Ill, but a large proportion died. This unhappy experience was nevertheless of great value in that it proved that the living virus of Louping-Ill could not be employed in practice as a protective vaccine.

Other sheep were quickly obtained and immunised with less potent preparations of the virus, and a group of 48 'protected' sheep was finally procured.

The sheep were then transported to infected pastures where they were grazed on two fenced enclosures, each of about 35 acres, and were disposed as follows :—

Pasture A.	*Pasture B.*
24 'protected.'	24 'protected.'
25 controls.	24 controls.
—	—
49	48

The sheep on both enclosures were kept under close observation from the day of arrival on the experimental pastures at the beginning of April until their return to the Moredun Institute in the middle of June.

The temperatures of all the sheep on Pasture A were recorded daily, and 15 'protected' with 15 control sheep were weighed twice weekly.

The sheep on Pasture B, while kept under close observation, were otherwise left undisturbed, with the object of maintaining them under approximately normal conditions of management.

The test sheep were thus exposed to the chance of natural infection by Louping-Ill and by the hypothetical Tick Borne Fever.

1. *Are sheep which are artificially immunised to experimentally produced Louping-Ill protected against natural Louping-Ill infection ?*

In consequence of intercurrent disease in the test animals, the assessment of the protective value of the experimental Louping-Ill vaccine could not be made with precision. This was unfortunate, but not wholly unexpected since, because of the urgency of the need to commence the experiment at the beginning of the period of maximal tick activity, a considerable number of 'protected' sheep were still suffering from the toxic effects of the virus injection.

Of the 48 'protected' sheep, 8 died : 5 of these deaths can be directly or indirectly attributed to the injection of virus. Of the remaining 3 sheep, 2 died from causes apparently unconnected with Louping-Ill, while 1 exhibited symptoms suggestive of Louping-Ill; and in this case the presence of Louping-Ill virus in the brain was demonstrated. Whether this virus represented that of natural infection, or was introduced as the result of the immunising injection, is a question for consideration.

Of the 49 control sheep, 26 died. Three died from typical Louping-Ill. Of the remaining 23 deaths, 10 were attributed to a 'braxy-like' disease.

Cultural methods applied to material from two of these sheep revealed the presence of *Vibrion septique*, the micro-organism which is found invariably associated with Braxy.

Thirteen control sheep died from disease conditions which appeared to be unconnected with Louping-Ill.

It is to be noted, however, that in one of the cases which died from this 'braxy-like' disease, the virus of Louping-Ill was demonstrated in the blood, and this finding suggests the possibility that a number of these cases were, in point of fact, true Louping-Ill infections, unaccompanied by symptoms referable to central nervous system involvement.

At the conclusion of the experiment, the survivors (40 'protected' sheep and 23 controls) were returned to the Moredun Institute, and all were then subjected to subcutaneous injection of virus as a test of their immunity to Louping-Ill.

Of the 40 'protected' sheep, all remained unaffected.

Of the 23 controls, 14 remained unaffected, 9 developed a Louping-Ill temperature reaction, and four of these exhibited typical symptoms with, in three cases, fatal termination.

It was therefore assumed that 14 of the 23 surviving control sheep had been infected with the virus of Louping-Ill in the field and had withstood the infection.

As a control to the above experiment, 5 sheep which had never been exposed to Louping-Ill infection were subjected to the same subcutaneous injection of Louping-Ill virus, and all gave positive temperature reactions.

As has been said, it is difficult on the above evidence to assess precisely the value of vaccination with live virus against the natural disease in the field, but the evidence is such that one can reasonably conclude that it does possess a high protective value.

2. *Are sheep immune to Louping-Ill susceptible to Tick Borne Fever?*

All the sheep in both the 'protected' and control groups developed a febrile affection. This occurred between the sixth and ninth day after arrival on the pasture, and continued until about the nineteenth day. After these periods the temperatures generally returned to within the normal range.

It therefore appeared that since both the 'protected' and 'non-protected' sheep were equally susceptible to this febrile affection, it did not represent Louping-Ill.

In point of fact, the febrile affection eventually proved to be Tick Borne Fever; it is conceivable that the high mortality in the control group was largely due to a dual infection—that is, Louping-Ill in association with Tick Borne Fever.

3. *In the event of temperature reactions occurring in the test sheep exposed to infection in the field, do the reactions bear relationship in time or in degree to tick infestation?*

While the degree of tick infestation was progressive in its severity during the first two weeks after the arrival of the sheep on the 'infected' land, in the opinion of Dr MacLeod, the entomologist, the infestations were not such as would be likely to cause temperature reactions by mechanical irritation until about the thirteenth day, when infestation became generally severe.

As has been indicated, all the sheep on Pasture A exhibited temperature reactions from about the seventh to the nineteenth day after exposure to tick infestation.

A number of sheep which were only lightly infested by ticks exhibited severe temperature reactions, and there appeared to be no relationship between the degree of infestation and the degree of thermal reaction.

The above evidence indicates that the febrile affection was not due to tick infestation *per se*, but resulted from a tick borne infective disease.

4. *Is tick infestation, Louping-Ill and/or Tick Borne Fever associated with loss of body weight?*

As has been stated, it was arranged that 15 control and 15 'protected' sheep should be weighed twice weekly. Of these, 8 control and 9 'protected' sheep survived to the end of the experiment.

Examination of a composite graph of the weights of these sheep shows that both 'protected' and control sheep rapidly lost weight, almost from the commencement of the experiment until about the nineteenth day, after which they began to gain in weight.

The period during which weight was lost was that during which the febrile reactions exhibited their greatest intensity.

There appeared, however, to be no correlation between the loss of body weight and the degree of tick infestation.

It has long been recognised that tick infestation is associated with loss of body weight, but since the period during which weight was lost corresponds with that during which the febrile reactions exhibited their greatest intensity, and since there appeared to be no correlation in individual cases between the loss of body weight and the degree of tick infestation, it is reasonable to assume that the loss of condition was due to tick borne infections and not to the mechanical irritation resulting from tick bite.

5. *Is the character of Tick Borne Fever temperature reaction distinct from that of Louping-Ill and can the diseases be distinguished clinically ?*

It has been found that Louping-Ill and Tick Borne Fever can be distinguished on clinical grounds in that the thermal response to the infective agents of the two diseases is respectively characteristic.

Symptoms referable to central nervous system involvement, such as those of locomotor disturbance, do not occur during any phase of the Tick Borne Fever syndrome.

Tick Borne Fever, although attended by debility and marked reduction of physical condition, does not appear to be associated with high mortality.

The view that Louping-Ill and Tick Borne Fever do, in fact, represent distinct pathological entities is further supported by the following data :—

The histological lesions characteristic of Louping-Ill do not occur in Tick Borne Fever.

Louping-Ill infective blood is infective to mice, but these animals are insusceptible to Tick Borne Fever infective blood.

Mice are susceptible to the injection of emulsions of Louping-Ill infective ticks, but are immune to the injection of emulsions of Tick Borne Fever infective ticks.

6. *Can Louping-Ill be transmitted by tick bite : if so, what is the nature of the factor, if any, which predisposes the infested sheep to infection ?*

As has been indicated, the question whether the tick plays any part in the transmission of the disease has long been a subject of controversy.

The following account of the results of our recent experiments in Louping-Ill transmission by the tick is given in summary form, as this part of the work, which has been carried through by my colleagues, Dr MacLeod and Mr W. S. Gordon, has not yet been published.

While our earlier experiments in tick infestation had failed to elicit evidence that the tick was capable of transmitting the disease, they had shown that the tick did, in fact, transmit an infective fever other than that of Louping-Ill (Tick Borne Fever.)

In those experiments the ticks used had been collected from infected pastures, but, since we could not produce Louping-Ill experimentally by the use of such ticks, clean ticks—that is, ticks bred in the laboratory—fed upon non-susceptible animals and allowed to moult, were engorged on cases of Louping-Ill, and after moulting were subsequently engorged upon healthy sheep.

By this method it has been shown that the tick is capable of transmitting Louping-Ill infection.

It has also been proved that Tick Borne Fever can be set up experimentally by removing engorged ticks from cases of that disease and, after they have moulted to the next stage, allowing them to engorge on healthy sheep.

Tick Borne Fever can also be experimentally transmitted by inoculating healthy sheep with blood drawn from an affected animal during the febrile attack.

That a pathogenic association may exist between Tick Borne Fever and Louping-Ill must not be disregarded. It is possible that Tick Borne Fever may either predispose the animal to Louping-Ill infection or may enhance the activity of Louping-Ill virus, but these speculative views have yet to be tested.

DISCUSSION.

While it can be claimed that the century-old problem of Louping-Ill has been elucidated in so far that the cause and nature of the disease have now been determined and its transmission by tick bite proved, it yet remains to devise a protective vaccine which will be at once safe and effective, since the use of vaccines containing living virus must always be attended by real danger. Vaccines prepared from killed virus have already been tested on a limited number of sheep exposed to natural conditions of infection. The results are encouraging, and it is proposed to put the preparations to an extended trial during the present year.

It has been proved that Louping-Ill infection can be set up by the nasal insufflation of virus, and there exists the possibility that the disease can be also contracted by means other than by tick bites. Since, however, there is no evidence that Louping-Ill exists on pastures other than those that are tick invested, and since its greatest incidence occurs during the periods of maximal tick activity, it would appear that the tick constitutes the important factor in its transmission.

Among the several advances in knowledge which have been derived from this investigation, the discovery of the existence of a hitherto unsuspected disease in sheep—Tick Borne Fever—is not of least importance. The cause of this disease and the possibility that there exists a pathogenic association between Tick Borne Fever and Louping-Ill are now under investigation.

It is well recognised that when sheep are introduced to certain hill areas, they suffer at first a serious loss in physical condition, and this may be associated with considerable mortality. After some time the survivors improve in condition and the mortality incidence approximates to that of the native stock. These sheep are then said to have become 'acclimatised.' There is evidence to suggest that among the factors involved in the process of 'acclimatisation,' Louping-Ill and Tick Borne Fever play major parts.

The tick, *Ixodes ricinus*, has constituted a widespread pest of sheep flocks, but its rôle as a disease carrier in this country was known only in piraplasmosis ('red-water') in cattle. This investigation shows that the British tick is incriminated in the transmission of two important diseases of sheep, and the need for its effective control becomes the more obvious.

That *Ixodes ricinus* is the carrier of Louping-Ill is of considerable academic interest. There is only one other instance in which a tick is known to transmit a filtrable virus disease (Nairobi Sheep Disease. Montgomery, 1917.) Our work affords the first instance of the transmission of a neurotropic virus by a tick.

Since Louping-Ill bears resemblances to certain acute diseases of the human subject produced by analogous neurotropic viruses, the hope is expressed that these studies may yet prove of some value to Comparative Medicine.

SUMMARY.

1. The histo-pathology of Louping-Ill is represented by a meningo-encephalo-myelitis (an inflammation of the substance and coverings of the brain and spinal cord).
2. The causal factor of Louping-Ill is an ultra-microscopic filtrable virus.
3. The virus can, with great constancy, be demonstrated in the central nervous system. It is also present in the blood of affected sheep.
4. The disease can be experimentally transmitted by inoculating healthy sheep with material derived from the central nervous system of cases of Louping-Ill. Infection can also be produced, among other means, by subcutaneous and intradermal inoculation, and by nasal insufflation.
5. Sheep which have withstood infection by intranasal insufflation, intradermal or subcutaneous inoculation of infective material, are protected against subsequent intracerebral inoculation of virus.
6. The immunity induced in experimental sheep possesses a duration of at least eleven months.
7. Sheep immunised against the virus of Louping-Ill are protected against natural infection in the field.
8. Louping-Ill vaccines containing living virus are unsafe.
9. There is evidence that many sheep on infected pastures contract a form of Louping-Ill which, while it may prove

fatal, is not characterised by symptoms referable to involvement of the central nervous system.

10. Clinical and other evidence suggests that parturient hypocalcæmia (Lambing Sickness) is to be recognised as one of the several diseased conditions confused with Louping-Ill in the field.

11. The virus of Louping-Ill can be transmitted by the tick, *Ixodes ricinus*.

12. A hitherto unrecognised tick borne febrile disease (provisionally named Tick Borne Fever) occurs during the Louping-Ill season.

13. Tick Borne Fever can be distinguished from Louping-Ill on histological, immunological and clinical grounds.

14. It is possible that there exists a pathogenic association between Louping-Ill and Tick Borne Fever.

15. A marked reduction in body weight occurs in susceptible sheep placed on 'infected' pastures. The reduction in weight occurs during the period of febrile reaction to the tick borne infections—Tick Borne Fever and Louping-Ill.

THE PREVENTION OF FINGER-AND-TOE IN TURNIPS.

LIMING AND A DISEASE-RESISTANT VARIETY.

By PROFESSOR JAMES HENDRICK, B.Sc., F.I.C., University of Aberdeen.

ON certain plots, P and Q, in the Woodlands Field at Craibstone, turnips have been grown every year since 1915, so that in 1931 the seventeenth crop of turnips which had been grown in continuous succession was taken. The experiments were originally started on these plots because the crop grown on them in 1915 was found to be infected with finger-and-toe, so it was decided to use them for an experiment on the effect of lime in controlling the disease. Some account of the experiments on these plots has already been given in the 'Transactions,'[1] in papers which deal with the work up to the season 1922. Since then the experiments have been continued up to date, and as certain new features have been introduced and some new results of an interesting and important kind have been obtained, the present account has been written.

In the previous papers the analysis of the soil was given, together with an account of its nature and properties. Each of the two plots P and Q is divided into three strips or subplots, the middle one of which in each case, P 2 and Q 2, is unlimed, while P 1 and Q 1 have been dressed with ground lime and P 3 and Q 3 with carbonate of lime. The quantities of lime used up to 1922 are given in the previous paper. Generally speaking, the amount was such that all acidity in the soil was neutralised and there was a small excess of lime. The soil in its untreated state is slightly acid, pH 5·8 to 6, and it is still in this condition in the unlimed plots, P 2 and Q 2, while in the limed portions it is neutral or very slightly alkaline, pH 7 to 7·2.

The plots were always treated exactly alike as to manuring, the only difference between the different parts being in liming. The manuring up to 1922 has been already given. Since then the whole area of P and Q has each year had a moderate dressing of dung, about 12 tons per acre, and a dressing of artificials at the rate of 1 cwt. sulphate of ammonia, 3 cwt. superphosphate and 1 cwt. muriate of potash per acre. The manures given are such as are likely to be favourable to the prevalence of finger-and-toe. The continuance of such manuring with both dung and artificials every year has brought this soil into a high state of fertility.

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[1] "The Use of Lime in Controlling Finger-and-Toe in Turnips," 'High. Soc. Trans.,' Vol. XXX. (1918), pp. 137-145, by Professor James Hendrick, B.Sc., University of Aberdeen.

"An Experiment on Finger-and-Toe by Liming," 'High. Soc. Trans.,' Vol. XXXV. (1923), pp. 54-68, by Professor Hendrick, B.Sc., University of Aberdeen.

A dressing of ground lime was given to P 1 and Q 1 in 1925, and an equivalent dressing of carbonate of lime to P 3 and Q 3 at the same time. In 1927 a heavy dressing of ground lime was given to P 1 and Q 1 in order to try if the presence of a decided excess of lime had any marked effect on the result. No equivalent dressing of carbonate of lime was given to P 3 and Q 3. The effect of the ground lime given in 1927 was to produce a distinctly alkaline reaction (pH 7·45 to 7·65) on P 1 and Q 1.

AMOUNT OF DISEASE ON THE PLOTS.

In the previous paper the methods were described by which the amount of disease on the different plots was estimated. Each year the assistance of a party of senior students was obtained, each bulb was taken up separately and examined, and placed in a category according to the amount of disease found. Bulbs on which no disease could be found were classed as 'sound,' while those which contained nodules of disease on the rootlets only, or on which, if nodules were found on the bulb, they were not extensive and the diseased parts had not rotted, were classed as 'slightly diseased.' These two classes taken together formed what were classed as 'usable' bulbs. The remainder of the bulbs were classed as 'badly diseased' and 'rotten,' and consisted of roots which were of little or no value for feeding purposes. In the previous paper tables were given showing the percentages of roots in each of these classes obtained in each of the years from 1918 to 1922 inclusive from all the plots. In these years it was found that from 75 to 85 per cent of the roots from the limed areas were 'usable'—that is, were either sound or only slightly diseased, while the badly diseased and rotten roots were only 15 to 25 per cent of the total. On the other hand, on the unlimed areas only about 36 per cent of the roots were on the average 'usable,' while 64 per cent were badly diseased or rotten. In addition it was found that the total numbers of bulbs of all classes was considerably less on the unlimed than on the limed plots, since there were many blanks on the unlimed plots owing to plants having rotted away altogether owing to disease. This was clearly shown in photographs of the plots reproduced in that paper.

In the present paper it is not necessary to go again into such detail, and in Table I. only the percentages of sound and slightly diseased roots and of the total of these are given. The difference from 100 will give the percentage of 'bad' roots—that is, the total of badly diseased and rotten bulbs. The results are given in averages of five-year periods for the fifteen years from the beginning of the experiments in 1916.

Table I. shows that during the first five years, 1916 to 1920, there were from 87·6 to 91·1 per cent of usable roots in the limed areas, or an average of nearly 90 per cent, of which the greater part, nearly 66 per cent, were sound roots on which no disease could be detected; at the same time the unlimed areas yielded just under an average of 60 per cent of usable roots, of which only half, 30 per cent, were sound roots. During the next five years, 1921 to 1925, the percentages of usable roots, and especially of sound roots, fell off seriously both on the limed and on the unlimed plots. This was not merely an effect of season, for it was found both in years when finger-and-toe was generally prevalent and in good seasons when it was not so widely spread. Lime was applied at intervals during the period 1916 to 1919 to plots P 1, P 3, Q 1 and Q 3 in quantities given in the previous paper, until these plots were neutral in reaction and contained some excess of lime in the form of carbonate of lime. No more lime was applied till 1925. Meantime it was found that the amount of disease on all the plots increased considerably during this period when no lime was given. The soil was tested in the winter of 1924 after a very badly diseased crop had been taken off, and it was found that the excess of lime had disappeared from all the limed plots and that their reaction was again becoming faintly acid. In order to test whether it was the cessation of liming which was causing the plots to show more disease, lime was applied at the rate of 1 ton per acre of ground lime to P 1 and Q 1 and 2 tons per acre of carbonate of lime to P 3 and Q 3. This produced only a limited improvement in the crops of 1925 and 1926, in fact disease was unusually prevalent in the crop of 1926 even on the limed plots.

A heavy dressing of ground lime, 2 tons per acre, was therefore given in 1927 to P 1 and Q 1, but no corresponding application of carbonate of lime was made to P 3 and Q 3. P 1 and Q 1 were then found when tested to contain a decided excess of lime and to be slightly alkaline in reaction, pH 7·4 to 7·6.

Table I. shows that this heavy liming had some effect, for whereas in the previous years it was found that P 3 and Q 3, the plots which got carbonate of lime, had as little or less disease than P 1 and Q 1 which got ground lime, from 1927 onwards P 1 and Q 1 contained rather less disease than P 3 and Q 3. Keeping up the lime supply can do something to

TABLE I.—AVERAGE PERCENTAGES OF USABLE ROOTS BY 5-YEAR PERIODS.

	Period.	Plot P.			Plot Q.			Average of Plots P and Q.		
		1. Ground Lime.	2. No Lime.	3. Carbonate of Lime.	1. Ground Lime.	2. No Lime.	3. Carbonate of Lime.	1. Ground Lime.	2. No Lime.	3. Carbonate of Lime.
		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Sound Roots	1916-20	59·4	27·0	59·3	76·1	33·2	68·0	67·8	30·1	63·7
	1921-25	26·3	3·0	38·7	28·1	3·9	31·7	27·2	3·5	35·2
	1925-30	26·0	3·5	25·4	24·1	5·9	17·1	25·1	4·7	21·3
Slightly Diseased Roots	1916-20	28·2	29·4	29·1	15·0	29·5	19·6	21·6	29·5	24·4
	1921-25	15·0	22·0	36·4	30·2	26·6	34·8	22·6	24·3	35·6
	1925-30	38·7	23·4	36·6	36·6	25·5	41·7	37·7	24·5	39·2
Total Usable Roots	1916-20	87·6	56·4	88·4	91·1	62·7	87·6	89·4	59·6	88·0
	1921-25	41·3	25·0	75·1	58·3	30·5	66·5	49·8	27·8	70·8
	1925-30	64·7	26·9	62·0	60·7	31·4	58·8	62·7	29·2	60·4

keep the disease in check, but it did not bring back plots P 1 and Q 1 to the state of freedom from disease which they were in during the years 1916 to 1920. Further, the fact that the number of sound roots on the unlimed plots P 2 and Q 2 diminished greatly after the first few years, while the proportion of badly diseased and rotten roots greatly increased and has so continued during the periods 1921-1925 and 1926-1930, shows that some further explanation is needed. In certain of these years, like 1924 and 1926, when disease was unusually prevalent, not a single sound bulb was found on one or both of the unlimed plots.

It was mentioned in the previous paper that the remains of diseased and rotten turnips were left on the plots. In the process of taking up and weighing the crop and counting the amount of disease, badly diseased and rotten roots were spread more or less over all the plots. There will therefore be mass infection by the spores of the disease over all the plots. As a turnip crop is taken every year, no doubt in course of time the amount of infective material has increased so that these plots are now saturated with the disease, and in face of such mass infection even excess of lime is able to do no more than to keep the disease somewhat in check, but under these exceptional conditions it is unable to prevent a considerable proportion of the roots becoming more or less diseased.

Table II. gives the average crop per acre obtained from each of the plots during each of the five-year periods from 1916 to 1930. The whole of the bulbs, which were not so rotten that they could not be lifted, were weighed. The crop from the limed plots was in every case greater than that from the unlimed plots, and in years when disease was prevalent it was very much greater. It was also found, as shown in the previous paper, that the total number of bulbs was greater on the limed than on the unlimed plots, and that the smaller crops on the unlimed plots were due, in part at any rate, to the greater number of blanks. On the other hand, it was found that such bulbs as survived on the unlimed plots were generally of large size, for they had plenty of room and were also, probably, derived from vigorous plants. This makes the weight of crop obtained from these plots larger than it would otherwise be.

In 1922 disease-resisting varieties of turnips were tried on Plot P, while ordinary varieties were grown on Plot Q, and the result obtained was stated in the previous paper as follows: "That disease-resisting varieties do to a small extent resist the disease, but that they are by no means immune. When exposed, as in this case, to severe infection, they nearly all succumb to the disease and give a result which is only slightly better than that given by ordinary varieties." Varieties of turnips and swedes claimed to be disease-resisters were also

TABLE II.—AVERAGE CROP PER ACRE BY 5-YEAR PERIODS.

Period.	Plot P.			Plot Q.			Average of Plots P and Q.		
	1. Ground Lime.	2 No Lime.	3. Carbonate of Lime.	1. Ground Lime.	2. No Lime.	3. Carbonate of Lime.	1. Ground Lime.	2. No Lime.	3. Carbonate of Lime.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1916-20	12·7	9·8	15·3	14·0	10·5	13·7	13·4	10·2	14·5
1921-25	13·2	8·3	12·8	12·0	7·4	12·1	12·6	7·9	12·5
1925-30	14·9	11·5	14·8	13·7	9·4	13·7	14·3	10·5	14·3

tried in 1925 and 1926, and in all cases a similar result was obtained. In 1927 some local seed was obtained of a variety which was stated to be a good resister and to which the name 'Skene Purple Top Yellow' was given. This variety was found to be the best disease-resister which had yet been tried.

The following table shows the percentage of usable (sound and slightly diseased) roots of this variety obtained in 1927, in comparison with the percentages of Bangholm Swede[1] and Coxton Swede obtained at the same time.

TABLE III.

		Bangholm.	Skene P. Top.	Coxton.
		Per cent.	Per cent.	Per cent.
P	Ground lime . . .	55·2	84·8	75·7
	Unlimed . . .	2·9	56·1	25·8
	Paper works waste lime .	65·9	79·8	60·9
Q	Ground lime . . .	45·9	94·5	79·1
	Unlimed . . .	11·7	55·3	42·1
	Paper-works waste lime .	56·7	88·3	47·1

Skene Purple Top Yellow was tried again in 1928 in comparison with Garton's Purple Top Disease-resister and Sittyton Green Top Yellow, and the percentages of usable roots given in Table IV. were obtained.

TABLE IV.

	Garton's P.T. Disease-resister.	Skene P.T. Yellow.	Sittyton G.T. Yellow.
	Per cent.	Per cent.	Per cent.
Bed P unlimed .	9	87	9
Bed Q unlimed .	10	91	13

P and Q plots are excellent testing grounds for disease resistance. They are so full of infection that anything which can resist finger-and-toe on them, especially on the unlimed portions, is likely to be a real resister of this disease. We determined, therefore, to use the plots to test disease resistance and for trials in the selection of disease-resisting seed mothers.

It was at the suggestion of Mr William M. Findlay, the

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[1] It may be stated that strains of Bangholm of better disease-resisting quality are now upon the market; one of these, the Herning selection of Bangholm, was tried in 1931 and gave results which were fairly good, though not equal to those given by the Bruce.

Superintendent of Experiments at Craibstone, that the Skene Purple Top Yellow was first tried, and when such remarkable results were obtained with it he proceeded to investigate the nature and origin of this variety. The results of his investigation were published in the 'Scottish Journal of Agriculture' in 1931.[1] Mr Findlay found that this variety had been grown for many years in various districts of Aberdeenshire, Banffshire and Kincardineshire under a great variety of names such as 'Tammie Mackie,' 'Geordie Henry,' 'Sandy Robb,' 'Skene Purple Top,' 'Canker Resister,' 'The Uncankerable,' &c., &c. The information obtained indicated that it originated about one hundred years ago at Inverquhomery, which was then occupied by Mr James Bruce. The different strains differed somewhat from one another both in appearance and habit of growth, and in disease resistance, but all the strains tested were found to be resistant to finger-and-toe disease.

As different local strains were of similar colour and character, were all disease-resisters and seemed to have been derived originally from a common source, but were known by so many different names, Mr Findlay suggested that a distinctive name should be given to this turnip, and proposed that as the best evidence seemed to trace it to Mr Bruce of Inverquhomery it should be called 'The Bruce.' Many growers of the seed have agreed to this proposal, and the Bruce is now being extensively grown and advertised by seedsmen as a disease-resisting variety.

During the past three seasons trials have been made of different strains and selections of the Bruce on plots P and Q in comparison with other varieties of turnips and swedes, especially such as are claimed to be disease-resisting varieties.

In 1929 the Bruce was compared with Victor Achilles, a reputed disease-resister, and an ordinary purple topped variety. On the unlimed portions of the plots 93 per cent of the bulbs of the Bruce were usable, and the weight of the crop obtained was at the rate of 26 tons per acre; in the case of Victor Achilles the corresponding figures were 34 per cent and 11 tons 12 cwt., and in the case of the ordinary purple top, 2 per cent and 2 tons 2 cwt. Thus it will be seen that on the unlimed land the ordinary purple topped yellow was practically wiped out by the disease, about two-thirds of the Victor Achilles roots were so badly diseased as to be practically useless, while the Bruce gave a full crop and nearly the whole of the bulbs were sound or only touched with disease on the rootlets.

In 1930 a number of samples of the Bruce, from seed grown at Craibstone from seed mothers selected in 1928, were grown in these plots, and also a number of samples obtained from farmers and others in different parts of the country. For comparison with these, seven different varieties, including disease-resisting yellow turnips and swedes from different seedsmen, were grown. The results of all these are summarised in Table V.

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[1] "A Disease-resisting Turnip," by Wm. M. Findlay, 'Scottish Jour. of Agric.,' Vol. xii., pp. 173-183.

On Plot P was grown seed of the Bruce obtained from seed mothers selected at Craibstone in 1928 for resistance to disease and other desirable qualities. Both on the limed and on the unlimed plots this seed gave a good crop, but whereas on the plots treated either with ground lime or with carbonate of lime no disease could be detected either on the bulbs or on the rootlets, in the majority of cases on the unlimed plot there were no bulbs which were not touched by the disease, but nearly all of those which were touched by the disease were only slightly diseased; in other words, the bulb was free from disease and only some slight nodules were found on the rootlets. On the limed plots no badly diseased roots were found, and only a very few, 0·6 per cent, on the unlimed plot. On all plots there were some rotten bulbs and some blanks, but these were probably produced from causes other than finger-and-toe. Blanks occur in all parts of the plots from mistakes in hoeing and from failures which are found in all turnip fields, while rotten bulbs are produced by diseases and pests other than finger-and-toe and by accidental causes. It is to be noted that the percentage under 'Rotten and Blanks' is very much smaller in the case of the Bruce than in the case of other varieties of yellow turnips or in the case of swedes.

A comparison of the figures in Table V. brings out very clearly the capacity of the Bruce to produce a crop under circumstances in which other varieties of yellow turnips are almost wiped out by disease. In Plot P the Craibstone selected seed of the Bruce gave a crop of 18 tons per acre with 82 per cent of usable bulbs on the unlimed plot, while ordinary purple top yellows, several of which were reputed disease-resisters, gave on the same plot a crop of only 1 ton 3 cwt. per acre, only 6·5 per cent being usable roots while 87 per cent were rotten bulbs and blanks. The contrast on the limed plots is somewhat similar.

The seed of the Bruce sown on Q consisted of a number of samples which had been selected by farmers throughout the district. The result in this case was not quite so good as with the Craibstone selected seed. There were a few more badly diseased bulbs and a few more rotten bulbs and blanks, but the results obtained were better than those given by swedes grown alongside, though these swedes were mainly disease-resisters, and much better than those given by ordinary green top yellows, some of which were disease-resisters. The results obtained in 1931 were similar to those of 1930. On part of

TABLE V.—Results for 1930.

Plot P.

	The Bruce. Craibstone Seed.			Ordinary Purple Top Yellow.		
	1. Ground Lime.	2. No Lime.	3. Carbonate of Lime.	1. Ground Lime.	2. No Lime.	3. Carbonate of Lime.
Sound	55·6	0	55·3	14·9	0	0
Slightly diseased	35·8	82·0	34·2	31·9	6·5	24·0
Badly diseased	0·0	0·6	0·0	19·8	6·5	13·5
Rotten and blanks	8·6	17·4	10·5	33·4	87·0	62·5
	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.
Weight per acre	16 16	18 0	21 6	8 15	1 3	6 1

Plot Q.

	The Bruce. Farmers' Seed.			Swedes.			Green Top Yellow.		
	1. Ground Lime.	2. No Lime.	3. Carbonate of Lime.	1. Ground Lime.	2. No Lime.	3. Carbonate of Lime.	1. Ground Lime.	2. No Lime.	3. Carbonate of Lime.
Sound	37·9	18·6	28·0	15·9	0	3·8	8·0	0	0
Slightly diseased	45·0	43·5	44·4	43·7	13·2	55·3	34·4	9·2	25·6
Badly diseased	0·6	3·8	2·5	13·4	17·6	13·6	3·8	4·0	15·0
Rotten and blanks	16·5	34·1	25·1	27·0	69·2	27·3	53·8	86·8	59·4
	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.
Weight per acre	17 0	14 18	15 17	16 18	7 18	14 4	8 1	3 0	4 6

the plots samples of seed obtained from seed mothers of the Bruce selected at Craibstone in 1929 were grown in comparison with an ordinary variety of purple top yellows. The results obtained are shown in Table VI.

Even on the plots which received no lime over 80 per cent of the Bruce were usable roots, and on the limed plots over 90 per cent, while in the case of the ordinary purple top the crop was almost wiped out on the unlimed plots, and even on the limed plots the crop was badly diseased.

Analyses of the Bruce show that it is a turnip of good composition with a high percentage of dry matter. A large number of determinations have been made in my laboratory, and it has been found that on the average the Bruce contained a higher percentage of dry matter than the ordinary varieties of yellow turnips, whether purple topped or green topped, which were grown in comparison with it. It was found in fact that in dry matter the Bruce approached a swede in quality. It is also a good cropper, and even in the absence of finger-and-toe gives a crop which is quite as large as that of the leading varieties of yellow turnips, while when finger-and-toe is present it has been shown in the figures given above that it still gives a full crop when other varieties are largely destroyed by the disease.

CONCLUSIONS.

The results of all our experiments during the past five years show that in the Bruce we have a variety of yellow turnip which is really able to resist finger-and-toe even on land which is saturated with the disease and is in such a condition that all other varieties of turnips, even those which are ordinarily advertised as disease-resisters, succumb almost entirely to the disease. It is able to yield practically a full crop on the plots at Craibstone, on which turnips have been grown every season for more than fifteen years, and on the unlimed parts of which all other varieties of turnips and swedes which have been tried in recent years are very badly affected by the disease, so badly that in many cases practically no crop is obtained.

Such a turnip should be of the greatest value to farmers on whose land the turnip crop is apt to suffer from finger-and-toe. It will be necessary, however, to see that the seed continues to be selected from resistant strains, and Mr Findlay has stated, in his paper already referred to, " Those growing the Bruce for seed would therefore be well advised to grow their stock seed on an infected piece of ground in order to maintain, and if possible to increase, its resisting power."

TABLE VI.—Results obtained, 1931.

Average of P and Q Plots.

	Ground Lime.		No Lime.		Waste Lime.	
	The Bruce.	Ordinary Purple Top.	The Bruce.	Ordinary Purple Top.	The Bruce.	Ordinary Purple Top.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Sound	75·3	0	25·6	0	50·0	2·6
Slightly diseased . .	20·8	55·1	56·1	7·2	42·7	38·5
Badly diseased . .	0	26·1	6·1	25·3	1·2	35·9
Blank and rotten . .	3·9	18·8	12·2	67·5	6·1	23·0
	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.	Tons. Cwt.
Crop per acre . .	28 0	11 15	30 8	5 3	19 12	10 3

RESTORING THE FERTILITY OF SCOTTISH SHEEP GRAZINGS.[1]

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HISTORICAL.

DOMESTICATED sheep have existed in Scotland from prehistoric times. Record of their occurrence is contained in the earliest historical documents, and their bones are found accompanying relics of many animals now extinct.

The Scottish Blackface, referred to in earlier writings as the 'short,' 'heath,' 'forest' or 'Linton' breed, appears to have existed in the southern uplands of Scotland from a very remote period. The Cheviot or 'long' sheep was, of course, introduced from the north of England at a much later date. Its introduction was not favoured by the shepherds of that time. Writing of Selkirkshire in 1832, James Hogg, the Ettrick Shepherd, voiced this complaint in no uncertain fashion. Up to the year 1785, he states, "the black-faced or forest breed had continued to be the sole breed of sheep reared in the district, and happy had it been for the inhabitants had no other been introduced to this day." About that time, however, the Cheviot breed was introduced, the demand increasing as a result of the growing woollen industry of England, until in the year 1796 (again according to Hogg) "it grew little better than the tulipo-mania that once seized on the Dutch."

In the Northern Highlands, that great district comprising Perthshire, Argyllshire, Inverness-shire, Ross-shire and Sutherlandshire, even the blackface breed was unknown until comparatively recent times. The suppression of the Jacobite rebellion of 1745 altered the whole economic system of the district, and opened up a vast grazing tract to the flockmasters, shepherds and sheep of Southern Scotland. According to John Anderson, W.S., who wrote in 1831, "The most important effect to the Highlands of the revolution which succeeded the events of 1746 were the rise in rents and the introduction of the sheep system. Till that period the value of property was estimated not by its returns in money or grain, but by the number of men who could be brought from each estate into the field."

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[1] The experimental work discussed in this essay forms part of the wider investigation on the relationship of nutrition to disease recently outlined by Orr, Macleod and Mackie ('The Lancet,' vi., No. 5622, May 1931).

It must not be supposed that the Highland clans owned no sheep of any kind. The aboriginal 'short-tailed sheep,' represented to-day chiefly by the Shetland breed, was evidently numerous on the hillsides, which at that time were held as commons. This breed persisted in certain districts well into the following century. They are described by Gall of Glendrissaig (1839) as having been the original sheep stock twenty years earlier (that is, in 1819). He describes them as "a small native grey-faced breed, somewhat like Shetland sheep, the wool being much finer than the common black-faced breed." This native breed eventually became extinct, partly as a result of repeated crossing with the improved Southern breeds, as was the fate of those described by Gall.

The results of the introduction of sheep to the Highlands are summarised by the Rev. Mr Singers (1807) as—

1. A great rise in the rents.
2. The furnishing of a valuable supply of wool to manufacturers.
3. A reduction of the numbers of black cattle.
4. Depopulation.

It is important that he mentions neither mutton nor breeding stock as being of commercial importance at that time. Wool was then, and for many years continued to be, of far greater relative value than it is to-day. In the earlier part of the nineteenth century the Highlands suffered from a great sheep boom. Every available grazing was colonised by sheep, their numbers increased, rents rose and fortunes were made by graziers. The word 'suffered' is used advisedly, since but scant courtesy was paid to the fertility of the land or to the welfare of its inhabitants. Over-stocking undoubtedly occurred, little attention was paid to the pasture, and the number of cattle was progressively reduced. Hill draining, whilst increasing the area of productive pasture, did nothing to maintain fertility, and indeed by leading to further over-stocking, tended to its further decrease. As in all booms, depression has followed, and graziers have become alarmed at the increasing death-rate, the reduction of carrying capacity and the poorer feeding value of the same pastures exploited by their predecessors, who were often indeed their own fathers. Sir Robert Greig in a recent article has pointed out how very serious the reduction in carrying capacity has become.

The Highland glens before 1745 were fairly thickly populated. The system of cultivation was the ancient system of 'infield' and 'outfield' under a system of common ownership. The crops were grown around the dwelling-houses, and the sheep, cattle and goats grazed on the hillsides in summer and came down to the low ground after harvest. The slopes of the valleys were thus under cultivation, however primitive it may have been, and the hills were grazed by cattle, which were numerous and the chief wealth of the clansmen.

One must suppose that these same clansmen were better at raising a war-cry than at raising a rent. Very soon after the rebellion men were cleared from the valleys and cattle from the hills, and the invasion of sheep began. To a shepherd driving his sheep the long way from the borders, these valleys and hills must have seemed paradise indeed. It would have been the autumn when he came, with the hills at their best. He came to deserted valleys recently cultivated, cleared of bracken and whins by the strong hand of man, and to hills bare of stock, cleared of rushes and coarse grasses by the strong jaws of cattle. The Southern sheep, the 'big sheep' accursed by the Highland poet, began to graze, almost two hundred years ago, where their descendants are grazing to-day. The Southern sheep were bigger than the aboriginal 'short-tail,' and were more numerous. They were more quickly maturing, producing more mutton and more wool, and the strain on the land was thus greater. Bred and acclimatised to the more fertile hills of the South, it is probable that they were from the very first too quickly maturing, of too rapid growth and of too great size for the poorer grazings of the Highlands. In Argyllshire, and generally in the west, the death-rate has always been high, particularly amongst sheep recently introduced, and this led early to the system of 'acclimatisation value,' by which sheep stocks are bound to the ground.

Without the scythe to keep bracken in check, and without cattle to keep the 'sprets' in check, the grazings soon began to deteriorate. Says James Macdonald, writing of Ross-shire in 1877, some sheep farmers "are beginning to find that their farms will not carry so many sheep, or keep them in so high condition, as fifteen or twenty years ago. Considerable portions of the grazing are becoming foggy and rough, and of little value as sheep pasture. We could point to one or two hirsels which carried stocks of from 1000 to 1100 over winter some twenty years ago, and which will now winter scarcely 800. The cause of this, we believe, is the covering of the land for so long a period exclusively by sheep, without any Highland cattle being allowed upon it, as was the case before sheep farming reached its height."

Deterioration has since proceeded further. The reduction in hill stocks within the last fifty years, as shown by Sir Robert Greig, cannot be entirely attributed to deterioration of the grazings. Within that period a great change in the economy of hill grazings has taken place, by which the proportion of breeding ewes has been increased, and that of one, two and three-year-old wethers much diminished. The keeping of these wethers has become unprofitable, because of lower values for wool and the public demand for smaller joints and younger mutton. Wether stocks have been abandoned, and the high ground they grazed put under deer. In other hirsels ewes have taken the place of wethers, increasing the demands on fertility at a time when this was already becoming exhausted. But it has come to our notice that even pure ewe-stocks of fifty years' standing have decreased in numbers by a third. This is confirmed by the decline in the ewe-stock of certain Highland counties, a decrease during the last fifty years estimated at 17½ per cent in Argyll and 14 per cent in Inverness.

Now it is commonly admitted that continuous cropping of arable land leads to a speedy deterioration, unless a return of farmyard or other manure is made. It is not yet so widely realised that a continuous cropping of hill pasture by sheep must in time result in a similar process of depletion. " Accompanying the visible movement of milk and beef, there is a slow invisible flow of fertility. Every cargo of beef or milk products, every ship-load of bones, leaves the exporting country so much the poorer " (Orr, 1929). The danger of this progressive depletion of the Highlands was realised by Latham in 1883. In that year, fifty years ago, he wrote : " When we further consider the number of breeding ewes maintained, and the amount of mutton and wool which our Scotch mountains annually produce, it is not difficult to perceive that they are undergoing a process of impoverishment—in other words, are in course of being slowly but surely robbed of many fertilising properties, especially of their phosphates, and that to such a degree as (without a remedy) must, in course of time, render them comparatively unproductive."

The amount of lime and phosphoric acid removed from hill grazings by sheep can be roughly calculated. Taking Argyll as an example, the number of ewes in the period 1924-28 would be about 360,000. Assuming that 50 per cent of lambs were reared from these ewes, the number of lambs of one season would be 180,000. Of these, half would be ewe lambs, most of which would be retained for stock, leaving 90,000 wether lambs to be sold. There would also be at least a sixth of the ewes cast—that is, 60,000. Assuming the average dead weight of the lambs to be 20 lb. and of the cast ewes 40 lb., we get the following figures :—

Total export of mutton in lb.
Wether lambs = 90,000 × 20 = 1,800,000 lb.
Cast ewes = 60,000 × 40 = 2,400,000 „

Total . 4,200,000 lb.

A total of over four million pounds.

If the amount of lime (CaO) in a carcase is reckoned at 2 per cent, and the amount of phosphoric acid (P_2O_5) also at 2 per cent, figures which have been chemically determined for calves, the annual export of lime in sheep alone from Argyllshire is in the neighbourhood of 35 tons, and of phosphoric acid an equivalent amount. Now 35 tons of lime annually does not at first sight appear to be a great quantity, and from a limestone county would be immaterial; but over a period of a hundred years, 3500 tons of lime and 3500 tons of phosphoric acid removed from a soil originally poor in both is an impoverishment which cannot be ignored.

From the annual export of mineral matter must be subtracted the increased lime and phosphoric acid content which ewe hoggs gain at the wintering, and which they carry with them back to the hills. This cannot be very considerable, as ewe hoggs too often gain but little weight at wintering, and indeed may actually lose it. Even where there is gross loss of weight, however, the hoggs return bigger framed although leaner. There are, unfortunately, no figures to show how much fertility is restored to the hills by this means. It is possible that feeding minerals to hoggs at wintering might increase the quantity of lime and phosphorus in their bodies, thus increasing the return flow of fertility. It is an experiment well worthy of trial.

Whilst there is good evidence to show that the fertility of the Highlands is slowly being drained away, there has, if anything, been an increase in the productive demands of the sheep grazing them. It has been shown that the more slowly maturing wether stocks of past years have largely vanished, and ewes and lambs have in some districts taken their place. Then again hill stocks depend upon an annual importation of tups, which are as a rule bred by special breeders under special conditions. Two of the main aims of these tup breeders have been size and early maturity, and there has been a continual infusion of these characteristics into our hill stocks. Now the larger the sheep and the more rapidly it matures, the greater are the demands on the soil's fertility. It has thus come about that the demands on the soil have been increased by selective breeding at the very time that the soil was being progressively depleted and exploited. This may very possibly be a contributing factor to the high and increasing death-rate on certain grazings. Highland farmers have long been noted for careful breeding practices and for the selection of good tups. It is possible that the tups have been too good for certain grazings. Improvement of pasture must accompany attempted improvements by breeding, as has been clearly demonstrated in the case of South African veld cattle.

The productive value of the Highland hill grazings must be raised to the level of the sheep they carry, otherwise these sheep will inevitably decrease in numbers, in size and in fertility.

EARLIER INVESTIGATIONS.

The attempted restoration of fertility in hill grazings has engaged the attention of many workers in the past, and is the subject of investigations now in progress. It is clear that such attempts may take one of two forms, either directly by manuring of pastures or indirectly by feeding of the grazing animal. Theoretically the first method is undoubtedly the better, since the animal receives the added mineral matter in the natural and most readily assimilable form. Where economically possible, it should be the method of choice. But on grazings where stocking is reckoned not in sheep to the acre, but in acres to the sheep, the indirect method is that most likely to be found practicable. It is obviously impossible to manure a mountain-side, and the system of top dressing small patches is of small advantage, because of the strictly localised grazing habits of sheep of the hill breeds in use. The indirect method is more valuable because the direct benefit to the sheep should at least partly repay the expenditure incurred, and because a flock of sheep returning from feeding to their customary 'gangs' acts as an efficient manure distributer, and one which costs nothing. This method has doubtless been tried out in many an unrecorded experiment, and Professor Wallace published the conclusions of an extensive trial. He concluded that: "Sheep do much better on some places, in backward springs, when there is but little fresh growth, if supplied with a moderate quantity of concentrated food, judiciously administered." He was, however, more interested in the immediate effect on the sheep rather than on the remote effect on the pasture. Several years ago the Rowett Institute carried out an extensive investigation of the mineral content of cultivated and hill pastures. It was found that the mineral content of the poorer grazings was very much less than that of cultivated pasture. When grass samples were being collected from the grazings, inquiries were made as to the health and productivity of the sheep stocks that they carried. The results suggested that there was some correlation between the mineral content of the pasture and the health and productivity of the sheep. A condition called 'bent-leg' was found to occur on grazings of low mineral content, a condition which sometimes arises under very different conditions in rapidly growing tups. Major Elliot and Mr Crichton, working at the Rowett Institute, found that this condition of 'bent-leg' could be artificially produced by feeding a ration low in lime, and further, that the addition of either lime or cod-liver oil prevented its occurrence. Moreover, they found that a lime deficiency stunted the growth and lowered the vitality of their experimental sheep. With this evidence available, it was decided that a similar experiment should be carried out under field conditions, by feeding a mineral supplement to sheep grazing on pasture known to be of low mineral content. With this end in view fairly extensive experiments were undertaken in Argyllshire, the Borders and in the island of Arran. The sheep were most generously provided by the farmers, who also made themselves responsible for the actual feeding. The feeding-stuffs were supplied by the Rowett Institute. Observations were made on the fed sheep, which were compared with those on other hefts of similar grazing value. These tests, repeated for several seasons, seemed to show that on some farms the fed ewes lived better, milked better and reared more and stronger lambs. On other farms the results were completely negative. The most definite result was that the fed ewes clipped more wool than the unfed controls. This may well have been due to the ease with which fleece weights are obtained. It must be confessed that these earlier field experiments yielded results which, whilst suggestive, were nevertheless inconclusive.

GARROCHORAN FARM. PRELIMINARY OBSERVATIONS.

The earlier field experiments were carried out in co-operation with farmers and under the conditions of commercial farming, the farmer supplying the sheep and the Rowett Institute the feeding-stuffs. While this method is admirable in respect of economy, and the advantage of the practical experience of the farmers admittedly valuable, it was nevertheless found to be in many respects unsatisfactory. Farmers were naturally unwilling to gather their sheep specially for the purpose of the investigation, and the collection of data had therefore to be done at the usual commercial gatherings, such as marking, clipping and so on. These gatherings are times of great rush and activity on hill farms, and the commercial duties of the shepherds naturally took precedence. It was often impossible to have an observer present when the gatherings took place, as these depend upon weather conditions, so that much information was lost. It became obvious that, if progress was to be made, a special farm must be acquired for the special purpose of the investigation, where the feeding and collection of data would be the primary duty of the shepherds and commercial duties secondary. Accordingly in 1929 a hill farm with its stock was purchased through a grant made by the Empire Marketing Board. It was necessary to obtain a farm in an 'unsound' area, of moderate size and uniform grazing, accessible and with a suitable house on it. Such a place was not readily found, but eventually the farm of Garrochoran was purchased. This farm lies in the Cowal district of Argyllshire, about seven miles from Dunoon. The farm is about 1200 acres in extent, rises to about 2000 feet in height and faces the north. There is little bracken and only a moderate amount of heather, the hill being green with much wet ground. The sheep stock was taken over in October of 1929, the stock comprising—

460 breeding ewes.
12 wethers.
8 tups.

120 ewe hoggs at winter grazing were taken over at the same time. The entire farm was ring-fenced, and the hill divided into four areas by fences running from the bottom of the hill to join the ring fence on the hill-top. Fencing was practically completed by February 1930, and the four hefts have been kept separate from that time. The fencing was designed to correspond with the natural hefting of the sheep, and the sheep were thus confined to the portions of the hill to which they were accustomed. No feeding was attempted during the first year, attention being concentrated on obtaining detailed records of the production of the stock before attempting any improvement. Each ewe was individually numbered by branding on the horn, and a complete record of each ewe kept from the 2nd of April onwards. The ewes were weighed individually six times during the first year. The repeated handling of the sheep in the course of this work is admittedly bad commercial practice, but for the purposes of the investigation was, of course, quite unavoidable. The ewes were first weighed on the 4th February 1929, and at intervals throughout the following spring and summer. As was expected, the ewes were very much heavier in summer, as is shown by the following figures :—

AVERAGE WEIGHT OF EWES IN LB.

4th Feb.	*8th April.*	*31st July.*	*1st Sept.*	*3rd Oct.*	*31st Oct.*
71	65	81	83	91	88

The ewes in spring weighed only two-thirds of their autumn weight, and if weighed immediately after instead of before lambing would, of course, have weighed considerably less. They were indeed very lean and weak in spring, although the winter had been one of only moderate severity. The death-rate among the ewes was 11 per cent. During lambing each lamb was weighed by spring balance soon after birth, and the weights of the lambs recorded. The average weight of lambs at birth was 5·8 lb. From 455 ewes tupped there were 304 lambs born, a lambing percentage of 67 per cent. Of these lambs 200 were alive at weaning on 1st September, a death-rate among the lambs of 34 per cent. There were thus only 44 lambs reared from every 100 ewes tupped. The average weight of the lambs at weaning was 45 lb., the wether lambs averaging 47 lb. and the ewe lambs 44 lb. It was necessary to retain all the ewe lambs for stock. The wool-clip of the ewes averaged 3½ lb. per head. These production figures are summarised in the table below :—

TABLE I.—PRODUCTION RESULTS FOR THE WHOLE FARM FROM OCTOBER 1929 TO OCTOBER 1930.

Total number of ewes put to tup	455
Total mortality of ewes	52
Percentage mortality of ewes	11·43
Number of lambs born	304
Average birth weight of lambs	5·8 lb.
Number of lambs born per 100 ewes	66·8
Number of lambs weaned	200
Average weight at weaning	44 lb.
Total mortality of lambs	104
Percentage mortality of lambs	34·2
Percentage of lambs reared per total ewes	43·95
Average fleece weight (unwashed) of ewes	3·5 lb.

The financial returns were as follows :—

	Number.			
(1) Wether lambs	86	£66	13	4
(2) Cast ewes	63	63	0	0
(3) Wool	..	52	9	6
Total gross income		£182	2	10
Gross income per ewe		0	8	0

In considering these extraordinarily poor production figures, it must be admitted that the continual handling of the ewes was bad for them. Moreover, the year 1929-30 was considered an exceptionally unprofitable year in Argyllshire ; indeed the results at neighbouring farms, run on strictly commercial lines, were scarcely if at all better. The mortality among the ewes, 11 per cent, was high, and would have been higher had not the weaker ewes been taken down to the hay meadow and given box feeding, and in some cases gruel. The number of lambs born, 67 per 100 ewes, shows a low level of fertility. There is no evidence to show how many of the ewes were barren because of abortion. Some abortion certainly occurred, as was evident from the appearance of individual ewes at gathering. There were 304 lambs born, and of these 104 died before the autumn. This high death-rate among the lambs was due to various causes. It would be rash to attempt a pathological classification of the diseases occurring. An exact classification must await a much wider knowledge of sheep diseases than exists to-day. Such a classification in any case is not strictly relevant to the present discussion, since one of the objects of the investigation was to determine the effect of improved nutrition against disease in general. The financial returns were a serious feature. From the gross income of £180 odd would have to be deducted a rent of at least £50; hogg wintering expenses at least as much; tups, dip and miscellaneous at least £20—leaving less than a shepherd's wage for the tenants' reward. Naturally in a year of better prices and better lambing the results would have been more favourable, otherwise tenants of such grazings could not carry on. In any case, the detailed preliminary observations at Garrochoran, combined with the results of inquiries amongst neighbouring tenants, disclosed a state of affairs which could hardly be made worse, and might be very possibly improved upon.

It was therefore with some considerable confidence that experimental feeding was embarked upon in the second year. As already stated, the farm was divided by fencing into four separate hefts. Before commencing the experiment it was necessary to determine the relative productive capacity of the sheep in the four different hefts. This was done in the year of preliminary work, and the results are shown in Table II.

TABLE II.—PRODUCTION RESULTS FROM THE FOUR SEPARATE HEFTS, 1929-30.

	Heft 1.	Heft 2.	Heft 3.	Heft 4.
Number of ewes	93	158	135	69
Percentage mortality of ewes	14	10	12	7
Number of lambs born	58	89	98	59
Average birth weight of lambs	5·6 lb.	5·8 lb.	5·8 lb.	5·7 lb.
Percentage birth rate of lambs	62	56	72	85
Number of lambs weaned	39	67	57	37
Average weight at weaning	42 lb.	48 lb.	44 lb.	45 lb.
Total mortality of lambs	19	22	41	22
Percentage mortality of lambs	33	25	42	37
Average fleece weight (unwashed) of ewes	3·3 lb.	3·7 lb.	3·8 lb.	3·3 lb.

It will be seen that Heft 4 was superior in two important respects: there was a lower death-rate amongst the ewes and a higher lambing percentage. In other results it was equal to or little inferior to any of the other hefts. For these reasons it was chosen as a control in the succeeding year—that is, the heft which gave the best result in the preliminary year was to receive no supplementary feeding whatsoever during the course of the experiment.

GARROCHORAN FARM. THE FEEDING EXPERIMENTS.

In considering the design of the experiment, it must be clearly understood that it was not assumed that the poverty of the hill and the unproductiveness of the stock was entirely due to faulty nutrition. It was never assumed that all the deaths among ewes and lambs, or the infertility of the ewes, was the primary result of bad feeding. It was early realised that many of the ewes were older than the regular age of casting, that many of the drains required reopening, that fluke was present, and that the hill was dirty, bore the germs of diseases and had suffered from over-stocking. It is improbable that any of the casualties suffered or diseases encountered were the results of a specific nutritional deficiency, such as is known to be the cause of such diseases as scurvy. The object of the experiment was to determine how far, and in what way, improved nutrition might in itself counterbalance other known disadvantages of the grazing and of the stock carried by it; how far it might lessen the incidence and severity of the diseases encountered; and how far it could decrease the mortality of the ewes, and increase the number and value of the lambs reared by them. The object was not to convert a third-class sheep stock into one of the first rank, but to determine to what extent the characteristics which made it third-class could be altered by nutritional means.

It is obvious that the food might be deficient in one of two ways, in quality or in quantity; that there might be too little of it, or that it might be of the wrong kind; in more scientific language that it might be deficient in calories, a measure of energy, or in dietary constituents such as minerals or vitamins. The question of a possible protein deficiency was not investigated, since an indefinite number of groups of sheep was not available for study. There is also the probability of there being important substances in pasture still uninvestigated by science. Such hypothetical substances could not obviously be included in an investigation of this nature.

It was thought possible that the leanness and weakness of the ewes in spring-time might be due to a lack of energy-yielding food. To test this possibility one group (Heft 1) was fed maize, and maize only, during the winter and spring months. Maize is a carbohydrate concentrate, of low protein and mineral content, but easily digestible and of high starch value. In the winter of 1931 it was also relatively cheap. It was fed at the rate of one quarter pound per head per day from the 9th of October until the 4th of February, and one half pound per head from 4th February until the 15th of May.

Again, it was thought possible that mineral deficiency might be a cause of the low fertility, high death-rate and slow rate of growth of the sheep, since chemical analysis of the pasture had shown it to be low in lime, phosphorus and chlorine, in comparison with cultivated pasture. To test this possibility one group (Heft 2) was fed a mineral mixture composed of—

Steamed bone flour	3 parts.
Ground chalk	2 parts.
Common salt	1 part.

A small quantity of cod-liver oil was added to this mixture, since this substance is known to increase the retention of both lime and phosphorus by the animal body. This mixture was fed at the rate of 1½ ounces per head per day, a quantity estimated to raise the mineral content of a day's ration of Garrochoran pasture to the level of that of cultivated pasture. It was found that the sheep would not eat this mixture, and it was necessary to add a small quantity of maize and bran (1 ounce per head per day) to increase palatability sufficiently to induce the sheep to eat it. In a third group (Heft 3) the rations of Hefts 1 and 2 were combined. The ration of this group was designed to remedy a possible deficiency of both calories and of minerals. It also acted as an additional check on the results of feeding in Hefts 1 and 2. Was calorie deficiency the important factor, then Heft 3 (maize + minerals) should give a better result than Heft 2 (minerals alone), or was mineral deficiency the important factor, then Heft 3 should give a better result than Heft 1 (maize alone). Finally, should both a calorie and mineral deficiency be of importance, Heft 3 should give a better result than either Hefts 1 or 2. As already explained, Heft 4 received no supplementary feeding, acting as a control. For the sake of clearness the hefts and the rations fed to them are summarised below :—

	Maize.	Bran.	Mineral Mixture.
Heft 1	½ lb.	Nil.	Nil.
„ 2	½ oz.	½ oz.	1½ oz.
„ 3	½ lb.	½ oz.	1½ oz.
„ 4	Nil.	Nil.	Nil.

Ordinary wooden sheep troughs were used for spreading the feed. These were placed at convenient points on the hillside. The feed was kept in galvanised iron bins of about a hundredweight capacity. These, together with a few pails, constituted the equipment. The meals were taken up the hill at about weekly intervals, the bags being carried on horse back. It was thus unnecessary for the shepherd to carry anything on his rounds.

At first great difficulty was experienced in inducing the sheep to eat. They had never seen bins or troughs before, and were more inclined to run away from the boxes than to eat from them. Mr Jamieson, the manager, writing on the 14th October, stated: "Started to feed sheep in Heft 1. Three ewes came to the troughs and took a little maize. These ewes were in the fields last spring and were getting trough feeding." On the 15th October he wrote: "Started to feed the sheep in Heft 3. None of the sheep would eat. They came and smelled at the troughs and went away." On the 23rd October he took in 42 ewes from Heft 3 to a small paddock to accustom them to the troughs. A week later 30 of these were eating, and put back to the hill. Patience and perseverance eventually had their reward. On the 21st December he was able to write: "The sheep are still continuing to make progress in the eating of meals. Practically all sheep are eating in Heft 1. In Heft 2 about 125 (out of 156) are eating, and in Heft 3, 120 (out of 160)." It might be argued that the reluctance of these hill sheep to eat meals showed that artificial feeding was alien to their natures, and that they had no need of it. It seems altogether more probable that this reluctance is more a question of custom and habit than of natural instinct. Sheep, like men, are often slaves to tradition, and it is recognised that good grazing habits in a sheep stock depend largely upon the judgment and skill of the shepherd. In this connection it is noteworthy that this winter (1931) no difficulty was experienced, the sheep gathering to the boxes on the first day feeding was resumed, and requiring no dogging to bring them together. They collect at the customary feeding-time each morning, and after eating the meals spread out again to their usual feeding grounds.

During the experimental year (1930) data were collected in precisely the same manner as in the year of preliminary observation (1929). It was early evident that the feeding was favourably affecting the weight and strength of the ewes, an effect probably intensified by the cold stormy spring of 1931. This is shown by a comparison of the average weights of the different hefts in October, before feeding had started, and in March, after feeding had been satisfactorily in progress for three months.

	Heft 1.	Heft 2.	Heft 3.	Heft 4.
Weight in lb., 3rd October	85	87	86	86
Do. 3rd March .	72	72	75	64

In March the average weight of the unfed heft (4) was 10 lb. less than that of Heft 3 (maize + minerals). More important than this difference in weight was the fact that the unfed sheep were very much weaker. One might imagine that the fed sheep would be tamer and more easily handled. This was certainly not true at the end of winter, the unfed sheep being in many cases too weak to resist handling at all.

The production figures of 1930-31 for the four hefts are shown in Table III. :—

TABLE III.—Production Results from the Four Separate Hefts, 1930-31.

	Heft 1.	Heft 2.	Heft 3.	Heft 4.
Number of ewes	89	156	138	73
Percentage mortality of ewes	11	11	11	24
Number of lambs born	69	105	97	42
Average birth weight of lambs	6·0 lb.	6·0 lb.	7·0 lb.	6·0 lb.
Percentage birth-rate of lambs	83	79	82	67
Number of lambs weaned	55	93	79	31
Average weight at weaning	50 lb.	49 lb.	52 lb.	48 lb.
Total mortality of lambs	14	12	18	11
Percentage mortality of lambs	20	11	18	26
Average fleece weight (unwashed) of milk ewes	3·7 lb.	3·8 lb.	4·0 lb.	3·1 lb.
Average fleece weight (unwashed) of eild ewes	4·3 lb.	3·8 lb.	4·3 lb.	3·6 lb.

It is necessary, in the first place, to draw attention to the three most important figures in the table, the percentage mortality of ewes, the percentage birth-rate of lambs and the percentage mortality of lambs. It will be recalled that in the previous year (1929-30) Heft 4 had the lowest death-rate of ewes and the highest birth-rate of lambs, and was for that very reason chosen as the unfed control heft in the succeeding year. Now, after a single winter's feeding of Hefts 1, 2 and 3, the position of Heft 4 had, in these important particulars, been entirely reversed. The death-rate of the ewes was double, and the birth-rate of lambs 12 per cent below that of any of the fed hefts. Moreover, the percentage mortality of lambs was 6 per cent above that of the others, and the average fleece weight of the milk ewes half a pound less. It will be noted that the death-rate of Heft 4 in 1930-31, a mortality of 24 per cent, was very much greater than the mortality of any group in the previous year. There were two reasons for this difference. In the first place, the winter was a much more severe one. In the second place, in 1930-31 no ewes from any heft were taken into the fields for special treatment and feeding, thus differing from the practice of the previous year. This was done to equalise the conditions of all four hefts, and to remove any ambiguity which might have arisen from statements such that "more ewes would have died in the control heft had they not been given extra shelter and food."

It is further necessary to consider the relative production of the three hefts in order to ascertain the value of maize alone, of minerals alone, and of these two factors in combination. The death-rate of ewes, 11 per cent, was the same for all the fed hefts. Now as Heft 1 received no minerals and Heft 2 received a certain amount of maize, it must be concluded that maize was the important factor in saving the lives of some 13 per cent of the ewes in all the fed hefts. The greatest death-rate among all hefts was in April, at the end of the winter, and following an exceptionally severe month of March. Now maize being a carbohydrate concentrate of high starch value, it may be concluded that the high death-rate in Heft 4 was due to want of carbohydrate food ; in other words, to starvation, and not to mineral deficiency.

The average birth weight of lambs was one pound heavier in Heft 3 than in the other hefts, showing a greater development of the lambs at birth. This was by no means an unmixed blessing, as some of the lambs were too big and the horns too well grown to admit of an easy lambing, several ewes being lost from this cause in Heft 3. This trouble was not encountered in Hefts 1 or 2.

There was little difference in the lambing percentage in the three fed groups, all being considerably better in this respect than the unfed control. It may be mentioned at this point that there was a striking difference between the milking power of the gimmers in the different hefts. In Heft 4 (unfed) no gimmer had milk, and none of them reared a lamb. In Heft 3, the best fed group, all the gimmers reared lambs, although it is true that most of the lambs were 'shotts,' and that several of the gimmers became 'sookit doon' later in the summer. In Hefts 1 and 2 about half the gimmers reared a lamb.

At weaning-time the lambs of Heft 3 showed the highest average weight, even though the average was reduced by the larger number of gimmer lambs, all of which were small. The death-rate in this heft was also increased by the number of gimmer's lambs, many of which suffered badly from 'yellows' disease. The death-rate among lambs was least on Heft 2 (minerals alone), and it did seem that the lambs on Hefts 2 and 3, both mineral fed, were healthier and more lively than those of the maize fed group (Heft 1). In September the cast ewes, wether lambs and ewe lambs were sent to Aberdeen. All the sheep were numbered and heft marked before leaving Garrochoran. At Aberdeen the three classes were separated into their different groups and valued by a licensed valuator. The valuator did not, of course, know anything of the previous history of the different groups, and was simply asked to value and to make remarks on four different lots of cast ewes, four of ewe lambs and four of wether lambs. The ewes were the regular cast, eighty-four in number, and the lambs were the entire crop of 1931—251 in number. The valuations were made on 12th September, before the main sales had taken place, and are therefore too high, being based on the values ruling at the sales of the previous year. The comparative values are, however, unaffected by this fact. The details of valuation and the valuator's remarks on each lot are shown below :—

1. CAST EWES.

Heft 1 (maize) . . .	18	B.F. ewes at	19/-
Heft 2 (minerals) . . .	29	do.	19/-
Heft 3 (maize + minerals) .	27	do.	26/6
Heft 4 (unfed) . . .	10	do.	15/-

Remarks.

Heft 1. Although lean, appeared to be fresh and strong, and showed the greatest growth of wool.

Heft 2. Were very similar to Heft 1, with the exception of showing more condition and less growth of wool.

Heft 3. Had more condition than either Hefts 1 or 2, and appeared to be slightly more vigorous and fresher sheep.

Heft 4. Were very lean poor sheep.

2. EWE LAMBS.

Heft 1.	25	B.F. ewe lambs at	15/6
	9	do.	11/-
Heft 2.	39	B.F. ewe lambs at	14/6
	9	do.	9/-
Heft 3.	32	B.F. ewe lambs at	19/-
	8	do.	9/-
Heft 4.	15	B.F. ewe lambs at	13/6
	4	do.	8/-

Remarks.

Heft 1. Were well grown and well developed, better grown than Heft 2, and cleaner in face. They had a different appearance compared with any of the other three hefts, showing more appearance of growth, although not quite so sweet in type as Hefts 2 and 3.

Heft 2. Were a very equal lot in point of size—good condition, but not so well grown nor developed as Heft 3. These lambs looked young.

Heft 3. Were in very good condition, being well grown both in bone and wool—altogether well developed, and had the appearance of being better bred sheep than any of the other sheep.

The 'shotts' in this lot were very ragged in their coats on account of having been dressed for 'yellows.' This condition reduced their market value at the time of valuation by (in my opinion) 3s. per head.

Heft 4. Were lean—lacked bone and face—wool not well grown.

3. *Wether Lambs.*

Heft 1.	19 B.F. wedder lambs at	9/-
Heft 2.	45 do.	9/-
Heft 3.	33 do.	13/-
	1 B.F. rig lamb at	5/-
Heft 4.	11 B.F. wedder lambs at	7/6
	1 B.F. rig lamb at	10/-

Remarks.

Heft 1. Well grown in bone and wool—not so much condition as Hefts 2 and 3. Have the appearance of being suitable for keeping for old wedders.

Heft 2. Fleshy lambs—rather small—appear young—not so heavy nor so well developed as Heft 3.

Heft 3. Well grown and developed in size, bone and wool—in good condition.

Heft 4. Weaker in face and bone than any of the other hefts —show less growth of wool.

It is evident that the valuator placed the hefts in the following order :—

I. Heft 3 (maize + minerals).
II. Heft 1 (maize).
III. Heft 2 (minerals).
IV. Heft 4 (unfed).

On the basis of these valuation figures it can be shown that the gross return from each ewe put to the tup was in

Heft 1 . .	11/2	Heft 3 . .	12/1
Heft 2 . .	10/4	Heft 4 . .	6/6

The feeding of maize and minerals together almost doubled the value of the annual produce.

COMMERCIAL POSSIBILITIES.

Much of the expenditure incurred during the investigation had no relation to commercial considerations. Ring fencing, the heaviest item, was necessary for the complete control demanded by accuracy in the recording of data, and division fencing by the separation of the four feeding groups. Such expenditure on a commercial farm would obviously be unnecessary.

Two men, manager and shepherd, were employed on the farm, and the great proportion of their time was devoted to the sheep. Here again much time was spent on purely scientific work, the weighing of sheep and lambs, recording of data and gathering the sheep for special purposes of the experiment. The actual feeding could have been performed by one shepherd in addition to his other duties. Teaching the sheep to feed entails a great deal of extra work, but on a commercial farm it would be unnecessary to teach more than one heft at a time, and once the sheep have acquired the habit, herding becomes actually easier. The sheep come to meet the shepherd, in place of the shepherd having to search the whole hill for the sheep; gatherings are done with half the trouble, with half the dogging and in half the time. It must be admitted that Garrochoran is a relatively easy hill to herd, and that in wilder country feeding would be more difficult; but there seems no reason why some of the sheep, perhaps on the worst hefts, could not be fed on most hills without extra expenditure on labour.

A certain capital expenditure for equipment is required. At Garrochoran this equipment comprised troughs and bins. The total cost was £26, 4s., an expenditure per ewe of 1s. 4d. This cost could have been substantially reduced had time been of less importance.

The actual cost of the feeding-stuffs is the most important item to consider. It has been shown that the gross return per head in the different hefts was:—

Heft 1 (maize)	11/2
Heft 2 (minerals)	10/4
Heft 3 (maize + minerals)	12/1
Heft 4 (unfed)	6/6

There can therefore be absolutely no question of the increased *production* that feeding produced. It is unfortunate, but nevertheless true, that increased production does not necessarily mean increased *profit*. The cost of feeding per ewe (apart from rent) in the different hefts was:—

Heft 1	5/7	Heft 3	7/6
Heft 2	3/2	Heft 4	0

The cost of feeding includes transport charges, and is the cost of feeding-stuffs delivered at the farm.

The net return per ewe (total production per head minus feeding costs per head) in the different hefts was as follows:—

Heft 1 = (11/2 − 5/7) = 5/7
Heft 2 = (10/4 − 3/2) = 7/2
Heft 3 = (12/1 − 7/6) = 4/7
Heft 4 = (6/6 − 0) = 6/6

It is evident that only in Heft 2 (minerals plus minimum quantity of maize and bran) did feeding actually pay. In Heft 3, which showed the best production results, feeding was definitely unprofitable.

It is true that the object of the experiment was clear-cut results and not maximum profit. Had profit been the object *of the research, better commercial results could have been* obtained. It was necessary to show, in the first place, that feeding actually did result in increased production before attempting to make this increased production profitable. Feeding results in more lambs, more cast ewes and more wool, and these, too, of better quality. The profit realised must therefore depend to a large extent on the relation of the price of the feeding-stuffs used to the price of sheep and wool. Feeding would offer the greatest hope of profit when sheep were dear and feeding-stuffs cheap. Unfortunately a farmer would be quite unable to make any calculations on this basis. In the winter of any year the price of feeding-stuffs is known, but who can foretell the price of lambs in the following autumn? It is also quite plain that the cost of feeding-stuffs delivered on the farm will increase with the inaccessibility of that farm, and that Garrochoran is favourably situated in this respect.

It must therefore be confessed that there is a great deal of further work to be done before it can be shown that feeding is likely to increase profits materially. Until that is done, the commercial farmer may be interested in the results of the investigation, but cannot be expected to apply them.

It is not yet known, however, to what extent the effect of feeding may be cumulative. May it be that while production on the unfed heft will remain stationary, the production of the fed hefts will go on increasing for several years, until fed lambs become fed cast ewes? It seems probable that this will happen, but the question cannot be answered definitely at the present time.

Again, it is not yet known what are the best substances to feed, whether for example all the constituents of the mineral mixture are of value; it is not known what is the most suitable time of year to feed, nor whether all the constituents should be fed at the same time of year. There are a great many questions as yet unanswered, which *will* be answered within the next few years, and the answers may increase the *immediate* commercial advantages of arresting the gradual but progressive impoverishment of Highland hill stocks.

There are several important commercial objections to the whole idea of feeding hill sheep which demand careful consideration. In the first place it is commonly argued that profit is improbable, or if there is a profit that it scarcely covers the risk of heavy expenditure on feeding-stuffs, when the price of the product is unknown, a matter already discussed in this paper.

There is the argument that feeding of hill sheep is impracticable. That is not so. If there are clear advantages in feeding, there is nothing impracticable in doing so, as the results of several years' work have shown.

It has been argued that feeding will decrease the hardiness and soften the constitution of the hill sheep, making them more liable to disease and starvation. This is almost certainly untrue. The relation of famine to pestilence has been recognised for generations. It is becoming daily more evident that shortage of food and the wrong kind of food, particularly in the young, lessens hardihood, and that a sound diet is a necessity for the development of a sound constitution. In practice, although perhaps not in theory, this is clearly recognised by all flockmasters. There is no natural selection or survival of the fittest on the hills. What shepherd worthy of the name ever allowed a weak sheep to die, if by additional food, shelter or medicine he could keep it alive ?

It may be argued that a fed stock, even though of better appearance at sale time, would lose their 'character' and drop in value accordingly. It is true that there is a prejudice against artificially fed store lambs, but with the centralisation of markets now prevalent, lambs are bought largely on their appearance at sale time, *provided* they do well with the buyer. Now it seemed possible that the smaller and poorer unfed lambs might thrive better on transference to better pasture than those bigger and stronger lambs off the fed hefts. It is possible to answer this objection. The ewe lambs from all hefts are being wintered at the present time at Aberdeen on the same pasture. The unfed lambs, far from gaining on those from the fed hefts, have rather fallen behind. This is shown by their weights in October and at the end of February.

	Heft 1.	Heft 2.	Heft 3.	Heft 4.
Weight in lb., October .	52	51	52	49
Weight in lb., February .	60	59	61	55
Increase in weight .	8	8	9	6

CONCLUSION.

It was shown by Greig that whilst the number of breeding sheep in Scotland has increased on arable ground, it has on the contrary actually decreased in the hill areas. Now, no matter whether the arable sheep farm carries a stock of half-bred, grey-face, Cheviot or Blackface ewes, these are almost invariably bought in as gimmers or cast ewes, and are not reared in the arable counties. A Border half-bred ewe may have been bred in Aberdeenshire from a Cheviot ewe reared in Caithness or Sutherland. A greyface ewe in Aberdeenshire may have been bred in Kincardine from a Blackface ewe reared in Lanark. The source of the arable sheep stocks lies therefore in the hills, and the standard of the sheep stocks of the whole country is regulated by the character of the breeding stocks of these areas. A decline in the numbers and size of hill sheep will therefore not only affect directly the tenants of hill grazings, but by increasing the price of breeding stock in relation to fat stock, and by decreasing the size of this breeding stock when obtained, will affect indirectly every commercial sheep-breeder in the country. The question of the progressive decline in hill farming is thus of interest, not only to the hill farmer but to every man who breeds sheep in Scotland. It is true that a gradual decline in productivity, extending over a period of centuries, may be of little import and less interest to the individual tenant-farmer whose period of tenancy is one rather of decades; but to the proprietor, and to the State, the gradual exhaustion of a large section of the country calls not only for earnest attention, but for the thorough consideration and exploration of any suggested remedy which has evidence to support it.

It has been shown that, in the experiment under consideration, maize feeding had a rapid effect in decreasing the death-rate and increasing the birth-rate among a stock of Blackface ewes. The effect of mineral feeding during the first year of the experiment was, on the whole, less marked, although it is undeniable that feeding maize and minerals together gave a greater effect than feeding maize alone. It is noteworthy that the effect of minerals was more marked in the young sheep than in the old; and this is to be expected, since the mineral requirements of growing animals are greater than those of adult condition. Moreover, in the present investigation the bones and constitutions of the ewes had been built up under conditions of mineral deficiency, and it was not to be expected that a few months of plenty could undo the damage produced by four, five or more years of want. The present communication is really in the nature of a progress report. The effect of feeding, particularly the effect of mineral feeding, cannot be adequately assessed until the ewe lambs, valued at Aberdeen in September 1931, return in 1936 as cast ewes with the complete records of production behind them. The effect of mineral feeding is cumulative, each succeeding generation is better able to carry a lamb and to milk it, and the effect of five years of plenty, not of six months, must be compared with the results of five years of want. But even with the meagre results of one year available, it may be confidently stated that feeding will increase the productivity of a hill stock; that it will decrease the death-rate and increase the birth-rate; that it will result in more lambs being raised, and that these lambs will be of greater size and value; that it will increase the wool clip and the value of the cast ewes; and that it will, by increasing the manurial value of the sheep's droppings, tend to restore the fertility of the hill.

It is probable that the feeding of hill sheep with a ration similar to that used in Heft 2—that is, a mineral mixture, plus a small quantity of more palatable food-stuffs of high caloric value—may be made a profitable practice. To secure the general adoption of what is a revolutionary innovation in hill farming, the margin of profit would have to be very considerable in order to induce a radical break with custom and tradition, and to cover the risk of a substantial increase in expenditure. To adopt a practice of this nature would be premature at the present time. In regard to mineral feeding, there is far too little known of the forms in which mineral matter is most readily absorbed, of the time of year in which that absorption is greatest and of the extent to which absorption varies with different physiological states, such as pregnancy, lactation and post-lactation.

It is not known under what circumstances the amount of minerals assimilated limits growth, nor to what extent growth increases the assimilation of minerals. These are scientific questions which can be answered by the scientist, and the knowledge so gained will very materially affect the cost of feeding and the value of its results.

The feeding of concentrates of high caloric value must naturally be influenced by season and the amount fed by the severity of the weather. It is obviously absurd to sacrifice a large number of sheep from starvation because of a temporary scarcity of natural food. Indeed, this is admitted by hill farmers, who commonly feed hay under such circumstances.

The present custom of using highly forced tups of early maturity, when accompanied by a gradual exhaustion of the soil, must lead to increased mortality and to deficiency disease in hill stocks. It may be repeated that the productive value of the Highland hill grazings *must* be raised to the level of the sheep they carry, otherwise these sheep will inevitably decrease in numbers, in size and in fertility. Direct feeding of the grazing animal affords a hopeful means of attaining this object.

ACKNOWLEDGMENT.

In preparing this essay, the 'Transactions' of this Society have been frequently consulted. These 'Transactions' not only offer an important contribution to advancement of agriculture and of agricultural science, but have preserved a vivid picture of developments in Scottish farming over more than a century.

INTENSIVE MANURING OF GRASSLAND.

RESULTS OBTAINED FROM THE CRAIBSTONE DRAIN GAUGES.

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IN a paper in the 'Transactions' for 1921 [1] an account was given of the drain gauges at Craibstone, the experimental farm of the North of Scotland College of Agriculture, and in a further paper in the 'Transactions' for 1930 the main results obtained from these drain gauges up to 1929 were given.[2] Under arrangements with the College the management of the drain gauges was taken over in 1931 by the Macaulay Institute for Soil Research, and they now form part of the equipment of that Institute.

The drain gauges completed the first 6-year rotation in 1926, and were under turnips in 1927, barley with seeds in 1928, and hay in 1929. In 1930 and 1931 they were under grass, and as such small plots cannot be grazed, nor if they were grazed could the crops be weighed and analysed, the grass is cut at comparatively short intervals so as to keep it short and imitate as nearly as possible the conditions of land which is grazed. The crop obtained in this way is weighed and analysed, as are all the crops grown on these drain gauges. As great interest is being taken in the intensive manuring of grassland with nitrogenous and other manures, it was decided to treat the 3rd year grass on the drain gauges by this system, as it was considered likely that useful and interesting information would be obtained not only as to the quantity and composition of the crop which would be obtained in this way, but more particularly as to the fate of the nitrogenous manure applied and as to whether any portion of it, and if so how much, was washed away in the drainage. Numerous experiments have been made elsewhere on the crops of grass obtained by intensive nitrogenous manuring and on the composition of such crops, but it is only in drain gauge experiments that any losses of the nitrogenous manure can be determined, and so far as we are aware such experiments have not hitherto been made.

The treatment of the different drain gauges or lysimeters was given in the previous papers. No. 1 has been continuously unmanured, while Nos. 2 and 3 have been dunged with each turnip crop and have also received dressings of artificial manures. No. 3 has in addition been limed before the beginning of each rotation. It was shown in the previous paper that under the treatments given very heavy crops have been obtained on these drain gauges, each of which is one-thousandth of an acre in area, or 4·84 square yards, and that the barley crop in 1928, which was a very heavy one, greatly interfered with the growth of the grass and clover, which was almost a complete failure on No. 3, on which there was practically no clover, and a partial failure on No. 2, on which there was little clover. On No. 1 there was a fair plant of grass and clover, though even here there was a good crop of barley, over 25 cwt. grain and 29 cwt. straw per acre, which weakened the grass and clover to some extent. Grass and clover seeds were again sown on Nos. 2 and 3 after the barley was removed, but in spite of this and of the manuring, the hay crops obtained from Nos. 2 and 3 in 1929 were lighter than that obtained from the unmanured No. 1, and it is probable that the clover on No. 1 more than made up for the dressing of sulphate of ammonia at the rate of 1 cwt. per acre which was given in that year to Nos. 2 and 3. The unmanured hay crop obtained from No. 1 in 1929 contained 144 lb. nitrogen per acre, while the manured crop from No. 2 contained only 88 lb. and that from No. 3 only 83 lb.

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[1] "The Measurement of Soil Drainage, with an Account of the Craibstone Drain Gauges," 'Transactions,' 1921, pp. 56-79.

[2] "A Soil Balance-sheet for a Rotation. Results obtained from the Craibstone Drain Gauges," 'Transactions,' 1930, pp. 1-27.

During the season 1930, when the crop was second year's grass, no further manuring was given. The crop recovered to some extent during the year, especially that on No. 3, which gave the largest weight. No. 2 also picked up greatly ; in this case the amount of clover present was by far the greatest, that on No. 3 being next. The manuring given to Nos. 2 and 3 during the rotation to the end of 1931 is shown in Table I. In preparation for the intensive nitrogenous manuring a dressing of phosphate and potash was given at the end of the season 1930.

TABLE I.—MANURIAL TREATMENT, 1927-1931.
(Per Acre. Applied to Drain Gauges 2 and 3).

	1927.	1928.	1929.	1930.	1931.	Total.
	Turnips.	Barley.	Hay.	Grass.	Grass.	
Dung	12 tons.	..	..	..	..	12 tons.
Sulphate of ammonia .	1 cwt.	1½ cwt.	1 cwt.	..	4 cwt.	7½ cwt.
Superphosphate . .	4 cwt.	..	2 cwt.	..	..	6 cwt.
St. Bone flour . .	1 cwt.	..	..	..	..	1 cwt.
Muriate of potash .	1 cwt.	..	..	..	..	1 cwt.
Potash manure salt .	..	..	2 cwt.	..	..	2 cwt.
Ground mineral phosphate . . .	..	..	..	4 cwt.	..	4 cwt.
Kainite . . .	..	..	..	4 cwt.	..	4 cwt.

Ground lime was applied to No. 3 on 21st November 1925 at a rate equivalent to 2 tons calcium carbonate per acre.

The ground mineral phosphate and kainite given to Nos. 2 and 3 in 1930 were applied at the end of the season, on 15th November. The sulphate of ammonia given to Nos. 2 and 3 in 1931 was applied as follows: 19th March 1½ cwt., 28th May 1½ cwt., 3rd September 1 cwt.

The next table, Table II., gives the rainfall and drainage month by month during 1930 and 1931. It will be seen that 1930 was very wet during the last five months of the year. The rainfall for the whole year exceeded the average, 34·97 inches, obtained at the drain gauges for the twelve years, 1919 to 1930. The next year, 1931, was considerably drier, and the rainfall was a little below the average. The difference between the rainfall and the drainage shows the amount of water evaporated from the soil and transpired by the crop; it amounted to about 16 inches in 1930 and 15 inches in 1931.

TABLE II.—RAINFALL AND DRAINAGE. In Inches.

	1930.				1931.			
	Rainfall.	Drainage.			Rainfall.	Drainage.		
		1.	2.	3.		1.	2.	3.
January	2·07	1·61	1·45	1·51	3·49	2·58	2·54	2·58
February	1·57	1·35	1·17	1·18	2·63	2·75	2·68	2·83
March	1·09	·89	·72	·84	1·36	2·06	2·26	2·24
April	3·44	1·89	1·74	1·83	1·78	·28	·24	·39
May	1·27	·13	·12	·10	4·09	1·19	1·19	1·23
June	2·19	·004	·006	·001	3·66	2·58	2·49	2·38
July	1·50	..	..	..	3·06	·02	·02	·03
August	6·67	1·27	1·58	1·61	2·30	·64	·74	·71
September	6·23	4·90	4·86	4·93	1·45	·06	·12	·12
October	3·43	2·03	2·04	2·24	1·39	·006	·01	·009
November	3·95	3·87	3·85	3·90	4·54	3·28	3·44	3·37
December	5·11	4·78	4·61	4·57	1·34	·59	·61	·51
Year	38·52	22·724	22·146	22·711	31·09	16·036	16·34	16·399

Table III. shows the weight of the crop obtained from each drain gauge at each cutting in 1930, both in the fresh state, as it was cut, and in the completely dried state. Drain gauge No. 1 has been continuously unmanured since 1914, and the inherent fertility of this soil is shown by the crops it still bears. In 1928 the barley crop was over 25 cwt. of grain and 29 cwt. of straw, while in 1929 the hay crop yielded over 61 cwt. of dry matter, equivalent to more than 3 tons 10 cwt. of hay per acre. The grass in 1930 was cut at intervals of about a month, and this yielded a very much smaller crop, over 4 tons of fresh grass or over 19 cwt. of dry matter. In the circumstances, however, this is not at all a bad crop. The crops yielded by Nos. 2 and 3 in 1930 were somewhat greater than the crop on No. 1, but the increases were not remarkable considering the manuring previously given to these plots, which had not quite recovered from the smothering of the grass and clover by the very heavy barley crop of 1928.

During the autumn of 1930 it was decided to treat the following year's grass on lysimeters 2 and 3 in a manner similar to that recommended in the intensive system of manuring for grassland. The amount of manure given has already been stated in Table I. The crops obtained in 1930 and 1931 are given in Tables III. and IV.

TABLE III.—Weights of Crop on the Lysimeters, 1930.
(Pounds per Acre).

Date.	As Cut.			Dry Matter.		
	1.	2.	3.	1.	2.	3.
21st May . .	3,263	2,668	3,836	686	557	806
20th June . .	2,359	2,557	3,241	681	683	871
21st July . .	1,069	1,389	1,014	306	381	269
20th August . .	1,257	1,521	1,466	249	305	307
24th September .	1,151	1,691	1,257	223	333	238
Total . .	9,099	9,826	10,814	2,145	2,259	2,491
	81 cwt. 27 lb.	87 cwt. 82 lb.	96 cwt. 62 lb.	19 cwt. 17 lb.	20 cwt. 19 lb.	22 cwt. 27 lb.

TABLE IV.—Weights of Crop on the Lysimeters, 1931.
(Pounds per Acre).

Date.	As Cut.			Dry Matter.		
	1.	2.	3.	1.	2.	3.
21st May . .	1,907	4,034	4,563	498	928	1,065
16th June . .	2,315	4,365	5,048	428	636	727
9th July . .	1,514	2,171	1,929	335	494	450
26th August . .	5,037	2,734	4,321	992	650	937
24th November .	1,647	2,718	3,968	271	436	626
Total . .	12,420	16,022	19,829	2,524	3,194	3,805
	110 cwt. 100 lb.	143 cwt. 6 lb.	177 cwt. 5 lb.	22 cwt. 60 lb.	28 cwt. 58 lb.	33 cwt. 109 lb.

As in 1930 the crop of 1931 was cut at comparatively short intervals. With the exception of the first two cuts from No. 1, the weights obtained were much greater than those of the preceding year. Nos. 2 and 3 gave much heavier cuts than No. 1 in the early part of the season, but as the season advanced the differences were not so great. Throughout the year the crop on No. 1 contained by far the most clover, the amount, calculated on the dry weight, varying from 6·2 per cent in May to 34·2 per cent in July, with an average of 21·5 per cent. In the case of No. 3, on which the amount of clover was least, it varied from 1·4 per cent of the dry weight in November to 11·7 per cent in August, with an average for the season of 5·3 per cent.

Notwithstanding the dressings of sulphate of ammonia given to Nos. 2 and 3 the increases obtained are not exceptional, and the unmanured lysimeter, No. 1, gives under the circumstances quite a good yield.

As in previous years the drainage water was analysed every month in which sufficient was obtained. When the amount of drainage was too small for analysis it was added to the next month's drainage and analysed along with that. The nitrogen found in the drainage water was almost entirely in the form of nitrate, though mere traces of ammonia were generally found also. Table V. gives the amount of nitrogen stated in pounds per acre found from month to month in the drainage of each lysimeter in 1930 and 1931.

TABLE V.—NITROGEN IN THE DRAINAGE WATERS, 1930 AND 1931.
(Pounds per Acre).

	1930.			1931.		
	1.	2.	3.	1.	2.	3.
January . .	·35	·40	·55	·13	·11	·11
February . .	·31	·29	·37	·11	·13	·13
March . . .	·22	·20	·20	·09	·11	·11
April . . .	·46	·44	·42	·01	·01	·01
May . . .	·02	·02	·02	·04	·03	·03
June . . .	..	..	..	·08	·08	·08
July . . .	..	..	..	..	..	..
August . . .	·33	·40	·35	·02	·02	·02
September . .	1·32	1·10	1·23	..	..	..
October . .	·46	·50	·51	..	..	..
November . .	·88	·86	·88	·09	·11	·09
December . .	1·08	1·03	1·03	·01	·02	·01
Year . . .	5·43	5·24	5·56	·58	·62	·59

In 1930 the amounts of nitrogen found were quite comparable with those obtained in the previous rotation when the land was under grass. It was pointed out in the previous paper that these losses of nitrogen were remarkably small, and in 1930, as in the previous rotation, it was found that no more nitrogen was washed away from the manured lysimeters Nos. 2 and 3 than from the unmanured No. 1. It was anticipated that when heavy nitrogenous manuring was given during 1931 there would be greater losses of nitrogen from Nos. 2 and 3, but the result has not been in accordance with this anticipation: on the contrary the nitrogen washed away is much less than in any previous year. This result was considered so remarkable that at first it was supposed some mistake had been made, but careful repetitions of the analyses and calculations confirmed this unexpected finding. During 1931 the losses of nitrogen from all the drain gauges were so small as to be practically negligible.

Determinations of ammonia were made in the drainage waters as well as the determinations of nitrate, but the amounts of ammonia found were extremely small and were merely such traces as are commonly found in the drainage of cultivated land. Further, no appreciably greater amount of ammonia was ever found in the drainage of Nos. 2 and 3 to which sulphate of ammonia was applied, than in the drainage of No. 1 which got none. Immediately after the application of sulphate of ammonia in May there was considerable rainfall, but this did not lead to any appreciable loss of ammonia from any of the drain gauges, nor was the small quantity of nitrate found in the drainage waters any greater in the case of the manured lysimeters than in that of the unmanured one. It is shown in Table V. that the total amount of nitrogen, ammonia and nitrates combined, found in the drainage waters during May, June and July, which was the wettest period in the whole year, was very small, and that the water from No. 1 contained quite as much nitrogen as that from No. 2 or No. 3. We may conclude, therefore, that under the conditions of soil at Craibstone there is practically no loss of nitrogen, either as ammonia or as nitrate, when sulphate of ammonia is applied to grassland in such quantity as is usually given in the intensive manuring of pasture.

The next question is to determine how far the nitrogen applied as manure has been taken up by the crop. It has already been shown in Table IV. that the application of the manures to Nos. 2 and 3 increased the crop to a considerable extent, but that a good crop was obtained on the unmanured No. 1, and that the increases on the manured plots were quite ordinary. The next table, No. VI., shows the amount of nitrogen found in the crops of each lysimeter in 1930 and 1931. The crops in each year were carefully divided by hand into grasses and clovers, and the amount of nitrogen in each of these determined separately. The table gives the nitrogen, stated as pounds per acre, found in the grass and clover, as well as the total of the two.

TABLE VI.—NITROGEN IN THE CROPS, 1930 AND 1931.
(Pounds per Acre).

	1930.			1931.			Total.		
	1.	2.	3.	1.	2.	3.	1.	2.	3.
Grasses . .	49·09	44·97	61·50	56·77	90·12	114·64	105·86	135·09	176·14
Clovers . .	17·61	34·28	21·27	28·34	9·44	10·21	45·95	43·72	31·48
Total . .	66·70	79·25	82·77	85·11	99·56	124·85	151·81	178·81	207·62

The figures in the table show that the total nitrogen contained in the crops from Nos. 2 and 3 was in both years greater than that in the crop from No. 1. It was already shown in Tables III. and IV. that the crops obtained from Nos. 2 and 3 were also larger than that from No. 1. There is a marked difference in the distribution of nitrogen between the grasses and clovers in the two years. In 1930 No. 2 contained the largest proportion of clover in its crop, No. 3 came next, and No. 1 had the smallest proportion of clover. Accordingly we find that in this year nearly 45 per cent of the total nitrogen in the crop of No. 2 is derived from clover, while in the case of No. 1 the nitrogen derived from clover is only about 27 per cent of the total. In 1931 the crops on all the drain gauges, including the unmanured No. 1, were heavier than in 1930, and the proportion of clover in No. 1 had increased somewhat, for the proportion of the total nitrogen from clover in that year is about 33 per cent. On the other hand, the effect of the nitrogenous manures on Nos. 2 and 3 has been to diminish the clovers in a very marked manner, and all the increase in the crops on these plots is due to the increase in grass. Under 10 per cent of the total nitrogen is contained in the clover in both cases, and while the amount of nitrogen contained in the grass of these plots in 1931 is practically double that found in the grass in 1930, in the case of the clover the nitrogen in 1931 is less than half that of 1930 on No. 3, and not much more than one-fourth on No. 2. Inspection of the plots showed that before the end of the season there was very little clover left on either Nos. 2 or 3, while clover was quite strong on No. 1.

The nitrogen applied to Nos. 2 and 3 in 1931 in 4 cwt. sulphate of ammonia was 93·8 lb. per acre. Only a comparatively small part of this has been recovered in the crops, for though the total nitrogen yielded by the crops during the season exceeds this quantity we must deduct from this the quantity of nitrogen found in the crop on the unmanured No. 1, and that leaves less than 14½ lb. in the case of No. 2, and less than 40 lb. in the case of No. 3. The clovers, however, are able to supply their own nitrogen from the nitrogen of the air, and if we leave them out of account we find that the grasses alone on No. 2 contained nearly 33½ lb. of nitrogen more than those of No. 1, and in the case of No. 3 nearly 58 lb. more. In neither case does this account for nearly all the nitrogen applied as sulphate of ammonia.

When the drain gauges were constructed in 1914 the soil was carefully sampled and analysed, and in the surface soil of No. 1 there was found 0·177 per cent of nitrogen, in No. 2 0·184 per cent, and in No. 3 0·180 per cent. In order to find whether the manuring of Nos. 2 and 3 had increased the percentage of nitrogen as compared with No. 1, a number of small borings was taken from the surface soil of each drain gauge in December 1931, and the nitrogen in each determined in the sample so obtained from each drain gauge. It was found that No. 1 contained 0·204 per cent, No. 2 0·186 per cent and No. 3 0·207 per cent. Thus in each case it was found that the percentage of nitrogen had increased, but it has increased in No. 1 quite as much as in No. 3 and much more than in No. 2. It would seem then that so far as the evidence goes, the greater growth of clover on No. 1 has done quite as much to keep up the nitrogen in the soil as the addition of sulphate of ammonia on Nos. 2 and 3, and at the same time the increased growth of grass on Nos. 2 and 3 is not so great as was expected, and the pasture on these drain gauges is very poor in clover, while that on the unmanured No. 1 is rich in clover.

Chlorides and sulphates like nitrates are not fixed in the soil, but are freely washed out in the drainage. The dressing of kainite given to Nos. 2 and 3 in November 1930 contained chlorides equal to 208 lb. of chlorine per acre. The kainite also contained some sulphate, and more was applied in the sulphate of ammonia in 1931. The total amount of sulphuric acid (SO_3) thus applied was 288 lb. per acre. It has already been shown that very little of the nitrogen applied as sulphate of ammonia was recovered as nitrate in the drainage. It will be of interest to consider what happened in the case of chlorine and sulphuric acid. The chlorine and sulphuric acid when they appear in the drainage are combined with bases as chlorides and sulphates, and it will therefore be of interest also to see the effect of the manures on the principal bases, lime, magnesia, potash and soda, found in the drainage. This is shown for the years 1930 and 1931 in Table VII.

TABLE VII.—CONSTITUENTS REMOVED IN THE DRAINAGE WATERS, 1930 AND 1931.

(Pounds per Acre).

	1930.			1931.			Total.		
	1.	2.	3.	1.	2.	3.	1.	2.	3.
Soluble solids . .	567·5	883·5	914·4	357·8	586·9	657·0	925·3	1470·4	1571·4
Nitrogen (N) . .	5·4	5·2	5·6	·6	·6	·6	6·0	5·8	6·2
Silica (SiO_2) . .	55·6	61·6	58·8	31·2	33·5	42·0	86·8	95·1	100·8
Lime (CaO) . .	56·4	144·4	165·3	38·8	97·9	113·6	94·7	242·3	278·9
Magnesia (MgO) .	27·4	47·8	44·3	16·6	33·0	29·5	44·0	80·8	73·8
Potash (K_2O) . .	4·6	6·8	7·3	4·4	5·4	4·2	9·0	12·2	11·5
Soda (Na_2O) . .	65·2	108·9	97·4	40·7	69·4	61·0	105·9	178·3	158·4
Sulphuric acid (SO_3)	49·4	117·6	124·0	28·2	132·7	128·7	77·6	250·3	252·7
Chlorine (Cl) . .	63·0	187·6	183·3	36·5	106·7	100·6	99·5	294·3	283·9

The figures in the table show that far more chlorine and sulphuric acid were found in the drainage from Nos. 2 and 3 than in that from No. 1, both in 1930 and 1931. The figures obtained from month to month showed that there was not much difference between the chlorine contained in the water of the different drain gauges till November 1930 when the kainite was applied. Before the end of that month the chlorine began to increase in the water from Nos. 2 and 3, and in December the difference in the amount of chlorine in the water from these drain gauges and that from No. 1 was very great. The drainage from No. 1 in December contained chlorine equal to 13·5 lb. per acre, while that from No. 3 contained 119·7 lb. per acre. During 1931 the difference gradually became less, and before the end of the year Nos. 2 and 3 had fallen to nearly the same level in chlorine as No. 1. If we look at the totals for the two years it will be seen that the drainage from Nos. 2 and 3 contained almost 200 lb. per acre of chlorine more than that from No. 1. We may conclude then that the chlorine applied in manure is rapidly washed through in the drainage, and inside a few months nearly the whole of what is applied will appear in the drainage. As plants take up a little chlorine the small deficit which has not appeared in the drainage may be accounted for as removed by the crop or taken up by other organisms in the soil.

The case of sulphates is somewhat similar, but as is well known the sulphates found in the soil are not so soluble as the chlorides or nitrates, and therefore are not washed out in the drainage so rapidly.

Corresponding with the great increase in the sulphates and chlorides in the drainage of Nos. 2 and 3 in 1930 and 1931, the figures in the table show that the total soluble solids, and the bases lime, magnesia and soda, are also much more plentiful in the drainage from Nos. 2 and 3 than in the drainage from No. 1.

It may be assumed that when the sulphate of ammonia was added to the drain gauges 2 and 3 in 1931 the ammonia was rapidly and completely changed to nitrates. Previous experiments with Craibstone soil have shown that this is the case, and that in the absence of a crop the nitrates formed will be as rapidly and completely washed out in the drainage as are chlorides.[1] The great contrast in the figures between the nitrogen and the chlorine in the drainage in Table VII. must therefore be accounted for by the nitrates being taken up by the crop and other living organisms as fast as they are formed. We have already seen that it is difficult to account for all this nitrogen in the crop, for the increase in the grasses only accounts for a part of the nitrogen applied. At present we are unable to account satisfactorily for the rest.

Repeated determinations have been made of the weight and specific gravity of Craibstone soil, and these show that the surface soil to a depth of 9 inches weighs when dry from about 1050 to 1100 tons per acre. The dry soil in the surface 9 inches of each of the drain gauges therefore weighs approximately 21 cwt., since the drain gauges are each one-thousandth of an acre in area. The sulphate of ammonia given to Nos. 2 and 3 in 1931 was 4 cwt. per acre, that is, a little more than 7 ounces per drain gauge. This is a very small amount to mix with 21 cwt. of soil. To put it another way—nitrogen was given at the rate of 94 lb. per acre in 1931 to Nos. 2 and 3, that is, less than one-tenth of a pound of nitrogen per drain gauge. If this were all retained in the soil it would amount to only about 0·004 per cent of nitrogen. The actual amount of nitrogen shown by analysis to be present in the surface soil of drain gauge No. 3 amounts to over 0·2 per cent, or about 4500 lb. per acre in the surface 9 inches, or about 4·5 lb. in the surface 9 inches of the drain gauge. The small amount of nitrogen added as sulphate of ammonia would be almost inappreciable even if the whole of it remained in the soil.

It is proposed to continue the intensive manuring of Nos. 2 and 3 with sulphate of ammonia during the present year to find if the results of 1931 are confirmed during a second season.

So far as they go, however, the results of this experiment seem to emphasise two things:—

(1) That even when sulphate of ammonia is applied in such dressings as are ordinarily given in the intensive manuring of grassland there is no danger of any loss of the

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[1] "Drainage Investigations at Aberdeen," 'Scottish Journal of Agriculture,' vol. vii., 1924, pp. 8-18.

nitrogen in the drainage from land which is covered with grass, at any rate in a climate such as that of east Scotland.

(2) That the claims which have been made that extraordinary increases are obtained in the amount of food produced by pasture which is intensively manured have not been realised in this case. Lysimeter No. 1 has not been manured with either dung or artificials for many years, and has been continuously cropped. On the other hand, Nos. 2 and 3 have been well manured with both dung and artificials, and for the grass crop of 1931 received a good dressing of phosphate and potash, and also sulphate of ammonia at the rate of 4 cwt. per acre, yet the return for all this was an increase of only 6 cwt. of dry crop in the case of No. 2. No. 3 consistently gave bigger crops than either Nos. 1 or 2, even in the preliminary tests which were made before any of them was manured. It has a rather deeper and better soil than either of the others, and it has been limed while the others have received no lime, yet the increase in this case was only about 11 cwt. of dry matter per acre. Further, the pasture yielded by Nos. 2 and 3 was far poorer in clover than that on the unmanured No. 1, and this poverty in clover seems to have been due to the heavy nitrogenous manuring, for in 1930, before this manuring began, Nos. 2 and 3 bore more clover than No. 1.

SOME ECONOMIC METHODS OF REARING CALVES.

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THERE is considerable diversity in the methods of rearing calves practised in different parts of the country, but in the space of a short article it is scarcely possible to undertake a detailed survey of these methods or review the merits or demerits of each.

An attempt has been made, however, to deal in some detail with one or two methods which, having been given a good trial, appear worthy of further consideration and possibly of wider adoption. In addition, the main features of some of the systems that prevail in different parts of the country have been briefly outlined.

This country has been not inappropriately referred to as "The Stud Farm of the World"; nevertheless it is an admitted fact that more than half of our beef supply is imported. The actual imports into the United Kingdom of Chilled Beef and Frozen Beef in the last two years were as follows:—

	1931.	1930.
Chilled Beef . . .	465,000 tons.	451,000 tons.
Frozen Beef . . .	135,000 tons.	125,000 tons.

Home production of beef may be taken as supplying approximately 45 per cent and imports 55 per cent of our total requirements.

It is also generally accepted that even the very best imported beef falls considerably short of the finest of our home produce, and in view of the magnitude of these imports it seems not unreasonable to suggest that, *provided we supply what the market demands*, not only is there ample room for extension on the livestock side, but considerable benefit would be likely to accrue from such a development.

It is only too true that the arable farmers have for several years been experiencing even a more difficult time than the stock farmers. An extension on the livestock side, however, is likely to make for improvement of the position of both the arable and the stock farmer.

If an attempt is to be made to produce at home a larger proportion of our beef supplies, we cannot hope to compete successfully unless we have the right material to rear and unless the rearing is effected in such a way as to obtain maximum progress at minimum cost.

THE KIND OF CALF TO REAR.

In Calf Rearing the first essential for success is that the animal be of the right type and worth rearing. In that connection the importance of a good sire can scarcely be over-emphasised, as mated with forty or even more cows his influence is far-reaching.

There is ample room for difference of opinion as to the best methods of rearing calves, but surely there cannot be two opinions as to the wisdom of rejecting the inferior and rearing only the better type of calf. The well-bred calf responds to the feeding and, when given a suitable ration, grows and develops rapidly, but the inferior specimen, though similarly treated, fails to make anything like the same response, and nobody wishes to be the owner of it when it is reared.

Those who have repeatedly weighed calves, and noted their live weight increases from time to time, best appreciate this variation in progress and its effect on the cost at which that progress is obtained. It is always the poor doers that take away from the profit to the rearer, as the prices they bring are not at all in keeping with the costs of rearing. Good breeding is accordingly essential for success, nevertheless, while that is undoubtedly so it must go hand in hand with suitable feeding, for even the very best of breeding will prove of little avail if the young animals are not properly reared.

THE CALF PEN.

Too often any odd corner is made to serve for the housing of the calf, but that is a great mistake, as the accommodation provided is a factor of considerable importance in successful rearing. The essentials of a good calf pen are: that it be perfectly clean when the calf is put into it; that it be warm and comfortable; well lighted and well ventilated, but entirely free from draughts, which are often an unsuspected cause of trouble in rearing calves. The floor should be of an impervious nature, and if of concrete, a layer of asphalt or other bituminous material under the concrete makes for warmth; but failing that, a three-inch layer of peat moss litter with a liberal covering of straw on the top of it is ideal. Apart from making for warmth the peat moss litter has the additional advantage that it tends to keep the atmosphere pure and fresh because of its great absorbent powers.

When the calves are about three weeks old they may be run together in groups, but there should always be a few individual pens for new-born calves and isolation boxes for bought-in ones.

The calf pens for the older calves should be provided with a trough for the feeding of concentrates. Glazed or enamelled troughs, or galvanised iron troughs, are much superior to wooden ones, which generally have too many cracks and crevices in which food can lodge and ultimately prove a source of trouble.

A small hay rack should also be provided, and the calves should have access to fresh water. The small automatic enamelled water-bowl is an admirable method of providing water, and very rarely will calves with constant access to it drink too much.

In addition to the foregoing equipment there should be a holder for a salt block. Calves take very little salt while they are getting whole milk, but when on other rations they generally take considerable quantities and seem to benefit therefrom.

WHOLE MILK FOR CALVES.

Thanks to the good work of numerous investigators, there has in recent years been very considerable advance in knowledge of animal nutrition and in the compounding of suitable rations; nevertheless, in the case of the calf, nature's food (the mother's milk) is much superior to anything that has yet been devised. It is a complete food, ideal for the calf for the first few weeks of its life, and cannot be equalled far less improved on.

No matter what method of rearing is adopted it is highly desirable that whole milk should constitute practically the entire ration for a period of at least four weeks so as to give the calf a good start in life. After the first four weeks the critical period is past, and if the method of rearing permits of it, there is not then the same difficulty in reducing or in dispensing altogether with whole milk, though up to that time it should, unless in exceptional cases, be fed undiluted and unskimmed.

METHODS OF REARING.

Broadly speaking, the methods of rearing are two in number, viz., suckling and hand rearing.

The benefits from the suckling method in the case of ordinary Beef Breeds, and of many of our valuable pedigree Beef and Dual Purpose Breeds, are so well known that further comment is unnecessary, but the possibility of rearing good commercial calves by the suckling method does not appear to be quite so fully appreciated.

It is a method which, under proper management, can be made very intensive, and a good cow can rear a large number of calves during a normal lactation period. One hundred gallons of whole milk constitutes a fairly liberal allowance even for a calf intended for beef at eighteen or twenty months old, and a cow capable of giving, say, 800 gallons of milk in the course of her lactation can accordingly rear eight quite good calves.

One of the merits of the intensive suckling system lies in the fact that it involves little labour ; the calves do the milking and there are no milking or feeding pails or other utensils to trouble with. Further, suckled calves invariably do better than hand reared ones, even though getting no more milk. Receiving it as they do, direct from the cow and at the right temperature, it seems to do them more good, and there is undoubtedly less risk of certain calf ailments with suckled than with pail-fed calves.

The following instance gives an indication of what may be accomplished by this intensive suckling method. A blue-grey cross-bred cow was purchased at a farm sale in May 1929, and though only suckled for part of her lactation in that year—being two months calved at the time of purchase—she nevertheless reared seven calves. In the following year (1930) she reared nine calves, and in 1931 she brought up ten calves. She calved again in the end of March 1932 and was immediately started off with a group of four big strong calves.

When four calves are put on a cow at one time it is of the utmost importance that the calves are fairly uniform and that the cow milks evenly from all four quarters, otherwise some calves are apt to get more and others less than their due share. Cows rearing four calves should also be capable of giving at least four gallons of milk per day.

In the intensive suckling method under consideration the calves are never allowed to run with the cow: they only have access to her at milking time. By this method the cows never object to one group of calves being replaced by another but they take quite kindly to the fresh batch. The calves very soon get to know their foster mother, and even though several cows are being suckled the group of calves on each soon know where to go.

The first group put on after parturition should be young calves, or the cow should be milked for two days till the milk is nearer the normal. If at all possible the young calves should have access to the cow three times a day for the first few days: thereafter twice a day is all that is necessary.

When the cows are put out to grass the calves, if also outside, are run in a separate park convenient to the byre and brought in at milking time. They are invariably speedy and efficient milkers and they milk the cow perfectly dry in the course of a very few minutes. A cow, whose daily milk yield a week after calving is about three gallons, will quite easily feed three good strong calves. The milk yield generally rises for the first five or six weeks after calving, and this increase helps to keep pace with the live-weight increase of the calves until such time as they begin to take supplementary feeding. This they generally do from about four weeks old, and from that time on there is no difficulty for, though the amount of milk does not increase and may even slightly decrease, the supplementary feeding can be increased to keep pace with growth.

In the method under review the calves are generally suckled for a period of at least fourteen weeks, and after that time a second group of calves is put on. In effecting the change the fresh group of calves is given access to the cow first but they are not left long enough to suckle her dry. The older calves are then put out to the cow and get what is left. This goes on for a week or so, the young calves getting a little more and the older ones a little less each day. Latterly they are only allowed access to the cow once a day. By this method the older calves are weaned gradually and with the minimum of trouble, and the young calves are started with less risk, as the first-drawn milk being poorer is not likely to upset them and they get gradually accustomed to the stronger milk.

At the end of one week the older calves can be entirely weaned, and if indoors, carried on with concentrates, hay and a few roots; or if at grass, with concentrates which can be gradually reduced and withdrawn when the calves are about five months old.

When the third group of calves is put on the method adopted is exactly the same as for the second group, but as the cows are now well on in their lactation and the milk not quite so suitable for young calves it is better to procure calves about two weeks old, or feed them with the milk of a newly calved cow for the first two weeks.

For the success of this intensive suckling method it is absolutely essential that the calves be given supplementary feeding—*e.g.*, concentrates and hay—as soon as they can be encouraged to eat. Different mixtures have been tried, but equal parts Oats, Linseed Cake and Bran, form a very suitable supplement for calves getting whole milk.

The oats may be fed whole if there are no grinding facilities; the calves take even more quickly to them in that condition and appear to digest them just as fully as if they were crushed. Experiments carried out by the Irish Department of Agriculture comparing "Whole and Crushed Oats for Calves" showed that the results were practically equal. One hundred and forty (140) calves were utilised in the trial, seventy (70) in each group. The average increase from the Crushed Oats group was 1.34 lb. per calf per day, and from the Whole Oats group 1.32 lb. per calf per day.

Calves generally begin to eat concentrates and hay when about four weeks old; in fact some take quite appreciable amounts when only two weeks old ; if, however, they are slow in beginning to eat it is quite good policy to put one or two older calves with them as that generally has the desired effect.

The allowance of concentrates, in the case of the mixture already referred to, for calves suckling and getting fully a gallon of milk a day should be at least ¼ lb. per day for the fifth week, by which time the calves are generally eating fairly freely, and this daily allowance should be increased at the rate of ¼ lb. for each week. A suitable scheme of feeding is as follows :—

Age of Calf. Weeks.	Allowance of Concentrates per day. lb.	Hay.
1	...	...
2	...	...
3	...	...
4	Initial familiarizing allowance.	
5	¼	*Ad. lib.*
6	½	
7	¾	
8	1	
9	1¼	
10	1½	
11	1¾	
12	2	
13	2¼	
14	2½	
15	3	
16	3	

In addition to concentrates, calves that are indoors should get as much good fresh early-cut hay as they will clean up. At first they take very little, but very soon will eat as much as 2 lb. per day. They must also have access to water, as a gallon of milk per day does not supply them with anything like the amount of liquid they require.

Good commercial calves reared in this fashion generally put on from 1½ to 1¾ lb. live weight increase per day or from 10 to 12 lb. per week. Taking the live weight of the calves at birth as 80 lb., and this generally runs about one-sixth to one-eighth of the live weight of the dam, when weaned at fifteen weeks old they will generally scale from 2 to 2½ cwts. according to their weight at birth and the progress they have made.

If a cow rears eight or nine good calves in the course of her lactation she is doing fairly well for her owner, especially if good calves can be purchased at moderate prices. In that connection calves are generally very much cheaper in autumn and early winter than in spring, and in the case of the autumn-calving cows the first two groups of calves can be purchased while prices are still fairly low.

Apart from that aspect of the matter autumn-calving cows have invariably a longer lactation period than spring calvers, and being, as a rule, in better condition at the time of calving they give, other things being equal, a greater yield of milk.

A cow being in full flow during the winter period is more costly to feed, but that is to a great extent compensated for by the greater yield of milk during the year and the fact that the early winter calves make abnormal progress when put to the grass in spring.

HAND REARING METHOD.

Under this method the calf is removed from its dam at birth or, as is common in some districts, after a few days, and is then reared by hand.

The function of the colostrum or first-drawn milk after parturition is well known, also the importance of feeding either it, or a substitute for it, where it is not available.

The advisability of giving the calf whole milk for the first four weeks if at all possible has already been sufficiently stressed, though many hand reared calves are put on to other foods well within that time.

After the first four weeks a substitute cheaper than whole milk can generally be introduced in the case of hand reared calves, and in that connection it has been conclusively demonstrated in experiments carried out by Agricultural Colleges, the Royal Agricultural Society of England and the Department of Agriculture for Ireland, that if separated or skim milk is available and supplemented with crushed oats, calves will make almost as good progress thereon as on whole milk. It has also been shown that such a ration is very much cheaper.

Experiments carried out by The West of Scotland Agricultural College a few years ago (Bulletin No. 68) gave results that have been amply confirmed in other trials.

In these experiments whole milk was compared with a ration of separated milk introduced gradually after the calves were four weeks old and supplemented with crushed oats, the rations otherwise being the same.

The average daily increases from eight calves on each of these rations over a fourteen week period were as follows :—

Whole milk ration	1.96 lb. per day.
Separated milk, crushed oats ration . .	1.80 lb. per day.

The calves on the separated milk-crushed oats ration did almost as well as those on whole milk though the cost was very much lower, and in general appearance and bloom there was little or no difference in the two groups.

The real drawback to the adoption of such a system lies in the fact that there are comparatively few farms on which a sufficient supply of separated milk is available for calf rearing, and it was with a view to finding a substitute to replace the separated milk that the following trial was undertaken at the College Farm.

The rations compared were three in number, namely, Whole Milk, Separated Milk, and Dried Milk Powder reconstituted with water and fed as milk. From fourteen animals that were available twelve were selected, and these were arranged in three groups with four animals in each. All were bull calves, and each group contained two Shorthorn and two Aberdeen Angus calves. There was, unfortunately, a certain amount of variation in the individual live weights of the calves, but the groups were made as even as possible.

The young animals were housed in their respective groups in a roomy, well-lighted building with a concrete floor. Each calf pen had a sparred front and was provided with a feeding trough, a hay rack and a water bowl. A water meter was fitted to the pipe supplying the water bowl, and this recorded the amount of water taken by the calves. The feeding was as follows :—

Group I. 100 gallons of Whole Milk.
Group II. 50 gallons of Whole Milk and 50 gallons of Separated Milk.
Group III. 50 gallons of Whole Milk and 50 lb. Dried Milk Powder.

The Dried Milk Powder was reconstituted with water before being fed, 9 lb. of water being used for 1 lb. of Milk Powder, and in that condition the calves took readily to it.

For the first four weeks the feeding for all the calves was identical. Thereafter, while Whole Milk was continued for the animals in Group I. it was gradually replaced with Separated Milk for those in Group II., and with reconstituted Dried Milk for Group III.

After the first four weeks the calves were given a mixture of concentrates consisting of—

2 parts Linseed Cake, broken fine.
2 parts Flaked Maize.
1 part Wheat Bran.

The allowance was ¼ lb. per calf per day during the fifth week, by which time they were clearing that amount quite readily, and this was increased by ¼ lb. each week thereafter. Good Rye-grass and Clover Hay was also introduced into all the rations from the fourth week, and the calves given as much as they would clear up. In a short time they were taking up to 2 lb. per calf per day.

In the case of Group I. the feeding of the Whole Milk was continued for a period of fifteen weeks, the daily allowance being increased to 14 lb. at the end of the fourth week, and thereafter gradually reduced as the concentrates were increased until finally withdrawn at the end of the fifteenth week. The average amount over the whole period was just a little under one gallon per calf per day, being 100 gallons during 105 days.

Group II. were treated exactly the same as Group I. for the first four weeks, but thereafter the Whole Milk was gradually replaced by Separated Milk and withdrawn entirely after 50 gallons had been fed. For the remaining weeks of the trial it was replaced by Separated Milk, which, like the Whole Milk for Group I., was diminished and discontinued after fifteen weeks.

Group III. were treated in exactly the same way as Group II. excepting that 50 lb. Dried Milk Powder, reconstituted with water, was utilised to replace the 50 gallons of Separated Milk.

The calves were weighed at the beginning of the experiment, at fortnightly intervals while it was in progress, and again at the end of the fifteenth week when the trial terminated. The weights at the beginning and at the end of the experiment and the liveweight increases for the fifteen week period were as follows :—

[TABLE

Calf No.	Breed.	Live Weight at		Live weight Increase.
		Beginning of Experiment.	End of Experiment.	
GROUP I.—WHOLE MILK.				
		lb.	lb.	lb.
1	Shorthorn . . .	84	231	147
2	Shorthorn . . .	98	277	179
3	Aberdeen-Angus . .	122	362	240
4	Aberdeen-Angus . .	81	262	181
Group weight . . .		385	1132	747
Average live weight increase per calf per day, 1·78 lb.				
GROUP II.—SEPARATED MILK.				
1	Shorthorn . . .	104	310	206
2	Shorthorn . . .	80	261	181
3	Aberdeen-Angus . .	113	315	202
4	Aberdeen-Angus . .	92	211	119
Group weight . . .		389	1097	708
Average live weight increase per calf per day, 1·68 lb.				
GROUP III.—DRIED MILK POWDER.				
1	Shorthorn . . .	100	306	206
2	Shorthorn . . .	85	224	139
3	Aberdeen-Angus . .	108	294	186
4	Aberdeen-Angus . .	96	281	185
Group weight . . .		389	1105	716
Average live weight increase per calf per day, 1·70 lb.				

It will be observed that there was comparatively little difference in the average daily increases of the animals in the three groups; the important point is accordingly the cost at which these increases were obtained.

As the rations were identical, with the exception of the milk, a comparison of the relative costs of the three methods is readily obtained by considering that one item. Taking the Whole Milk at 6d. per gallon, the Separated Milk at 2d. per gallon and the Dried Milk Powder at 25s. per cwt., the cost of that part of the ration per calf is as follows :—

Group I.	100 gallons Whole Milk at 6d.; cost per calf, 50s.
Group II.	50 gallons Whole Milk at 6d. and 50 gallons Separated Milk at 2d.; cost per calf, 33s. 4d.
Group III.	50 gallons Whole Milk at 6d. and 50 lb. Dried Milk Powder at 25s. per cwt; cost per calf, 36s. 2d.

From the foregoing it will be readily apparent that from the point of view of cost the advantage lies with the Separated Milk and the Milk Powder Rations. As already pointed out, however, the former can only be obtained on a relatively small number of farms and is not generally available.

The trial would seem to suggest that Milk Powder, if procurable at a moderate price, might be very successfully utilised in the rearing of calves provided they receive Whole Milk for the first four weeks.

WATER TAKEN BY CALVES.

Mention has already been made of the fact that one gallon of milk per day does not supply nearly sufficient liquid for the calf. As in the case of the cow, water is the cheapest item in the ration, and progress should never be retarded from lack of it. In the experiment just reviewed the total amount of water taken by the calves was found to be as follows :—

	Group I.	Group II.	Group III.
	Gallons.	Gallons.	Gallons.
Total amount of water taken, 5th to 15th weeks inclusive	727	748	799
Average consumpt of water per calf per day for the eleven-week period .	1·72	1·78	1·81

There was a steady increase in the amount of water taken as the calves got older, in fact, this was very much in keeping with the live weight and age of the animals, and though the average for the eleven weeks is approximately 1¾ gallons per calf per day, in the fifteenth week it was well over 3 gallons per calf per day.

LINSEED CAKE FOR CALVES.

Of the various feeding stuffs that are available for calves, Linseed Cake, in view of its wide use, would appear to be the favourite concentrate. The result of an experiment carried out at the College Farm in 1930 would, however, seem to indicate that it can be replaced successfully with other concentrates, and in particular with Decorticated Ground Nut Cake. As this cake is much richer in protein a smaller amount suffices.

Twelve Shorthorn Calves were utilised for the trial. These were arranged in three uniform groups with four animals in each and housed in the pens already described. All of the calves were given a total allowance of 60 gallons of Whole Milk spread over a period of ten weeks. They also received a uniform allowance of hay, the only variant being the concentrates.

As the suitability of Linseed Cake for calves was an established fact, only one group of four received a ration containing it. For the other two groups it was replaced with half the amount of Decorticated Ground Nut Cake and an increased amount of Flaked Maize. The concentrate rations fed were as follows :—

Group I.	
Linseed Cake	1 part.
Crushed Oats	1 part.
Flaked Maize	1 part.

Groups II. and III.	
Decorticated Ground Nut Cake	½ part.
Crushed Oats	1 part.
Flaked Maize	1½ parts.

The calves were eating ½ lb. of these mixtures by the fifth week, and the allowance was increased at the rate of ¼ lb. per week up to a daily maximum of 3¼ lb. per calf in the sixteenth week.

The live weight increase for the Linseed Cake ration was 12.3 lb. per calf per week, and for the Decorticated Ground Nut Cake ration 12.8 lb. per calf per week. There was practically no difference in the live weight increase from the rations, but the Linseed Cake fed calves were in rather better bloom.

Experiments carried out by Dr M'Candlish of the Dairy Research Department gave very similar results, showing that Linseed Cake could be successfully replaced with Decorticated Ground Nut Cake, but that while the live weight increase was entirely satisfactory the animals were not in the same bloom, the Linseed being superior from that point of view.

SUMMARY OF HAND FEEDING METHODS PRACTISED.

The following table gives a brief summary of hand feeding methods throughout the British Isles, and indicates the diversity of practices.

The information, which has been much abbreviated, was kindly supplied by the gentlemen whose names appear in the first column under the different districts.

AREA.	Age when put off milk, Whole and Separated.	Quantity of Whole Milk allowed.	Concentrates.
SCOTLAND. Edinburgh (J. A. More)	Whole, 5-8 weeks.	Maximum allowance, 1½ gallons per day. Reduced prior to weaning.	At 3 weeks, hay offered. At 4 weeks, concentrates. Linseed Cake, 3 parts. Maize Meal, 2 parts. Crushed Oats, 2 parts. Bran, 1 part. Decorticated Ground Nut Cake, 1 part.
Aberdeen (W. J. Profeit)	Whole, 4 weeks. Separated, 4-5 months.	Up to 1½ gallons per day.	At 3 weeks, as gruel or dry meal— Linseed Cake, 2 parts. Oatmeal, 2 parts. Crushed Linseed, 1 part. At 6-7 weeks, equal parts Linseed Cake, Bran and Oats.
IRELAND. Antrim (The Principal) Greenmount Agricultural College	Whole, 6 weeks. Separated, 3 months.	Start with ½ gallon per day, increase to 1 gallon.	At 4 weeks, good hay. Rolled Oats, rising to 1 lb. per day at 6 weeks. Linseed Cake introduced and increased until equal with oats. At weaning, 2 lb. per day, plus hay.
Armagh (John Algie)	Whole. 4-6 weeks. Separated, 5-6 months.	½-¾ gallon daily, rising to 1½ gallons.	At 4 weeks, ¼ lb. Crushed Oats, increasing to 1-2 lb. at five months; and ½ lb. Linseed Cake, increasing to 1 lb.
ENGLAND. Cumberland (J. H. Faulder)	Whole, 7 weeks. Separated, beginning 4th and ending 24th week.	40 gallons, just under 1 gallon per day.	At 4 weeks-- Linseed Cake Meal, 1 lb. as porridge per gallon of separated milk. Hay also given.
Lancashire (J. J. Green)	Whole, 3-4 weeks. Separated then introduced and continued 5 months.		At 4 weeks— Porridge of Linseed Meal, Sharps and Oatmeal, occasionally Flour or Bran.
Cheshire (W. B. Mercer)	Whole, 5 or 6 weeks. Or Whole, 12-13 weeks.	25 gallons.	At 3 weeks— Dry feeding introduced. Linseed Cake Gruel, or Linseed Cake and Kibbled Oats, or Oatmeal.
Northants (L. F. Gregory)	Whole, 6 weeks.	1 gallon per day, gradually decreased.	¼ lb. per day, increasing to 3 lb. at 3 months. Hay and green food, water, Rock Salt. Various mixtures— Fish Meal, 1 part. Linseed Cake, 2 parts. Bran, 1 part. Oatmeal, 2 parts. Flaked Maize, 4 parts. 2 lb. Minerals per 100 lb. meal.
Derby (J. R. Bond)	Whole, 10 weeks.	Average, 1 gallon per day for 3 weeks, reduced and withdrawn at 10 weeks.	Palm Kernel Meal, Bran, Fish Meal. Occasionally Cod Liver Oil and minerals.

AREA.	Age when put off milk, Whole and Separated.	Quantity of Whole Milk allowed.	Concentrates.
Leicester (H. G. Robinson)	Whole, 8 weeks.	35-40 gallons. Average, ¾ gallon daily.	At 4 weeks, dry feeding— Linseed Cake, 6 parts. Fish Meal, 1 part. Bran, 2 parts. Oats, 6 parts. Flaked Maize, 5 parts. Hay also allowed.
Herts (J. Hunter-Smith)	Whole, 8 weeks.	30 gallons. ½-¾ gallons daily.	At 4 weeks— Crushed Oats and Fish Meal, ¼ lb. daily, fed dry. Later—Crushed Oats, Linseed Cake and a little Meal. Hay also given.
Berks (J. Mackintosh)	Whole, 8 weeks.	35-40 gallons. ¾ gallon daily.	At 4 weeks Linseed Cake, 30 to 40 per cent. White Fish Meal, 5 to 10 per cent. Starchy Foods. 40 to 60 per cent. Fed dry.
Bucks. (J. Porter)	Whole, 2-4 weeks. Separated, 2 months.		Good Calf Meal as gruel. Crushed Oats and Bran, gradually introduced. After 8 weeks only dry feed. Linseed Cake added to Oats and Bran.
Salop. (W. B. Thomson)	Whole, 8 weeks.	About 35 gallons.	At 2 weeks Meal Gruel given. At 3 weeks, Dry Calf Meals and Hay commenced.
Gloucester (J. F. H. Thomas)	Whole, 9 weeks.	Maximum, 1 gallon per day.	At 3-4 weeks water and hay offered. Linseed Cake, 2 parts. Crushed Oats, 1 part.
Lincoln (A. M'Vicar)	Whole, 4 weeks Separated, 2-3 months.		At 4-6 weeks— Linseed Cake and Bran or Crushed Oats, equal parts, also Hay and Rock Salt.
Essex (J. C. Leslie)	Whole, 4 weeks.	Maximum, 5 quarts daily.	At 4 weeks— Linseed Cake, Oats and Fish Meal. Weaning complete in 8 or 9 weeks.
Kent (G. H. Garrad)			Variety of feeding methods. Separated Milk and gruel common, but that given under "Berks" gaining ground.
Surrey (J. H. Mattinson)		1 gallon daily.	Concentrates given as soon as possible. Linseed Cake, Oats, Fish Meal, fed dry. Dried Milk occasionally from third or fourth day.
Devon (D. R. Edwardes-Ker)	Whole, 2-3 months.	Rising to a maximum of 1¼ gallons daily, then gradually reduced.	At 4 weeks fed dry— Crushed Oats, 1 part. Bran, 1 part. Sharps, 1 part. Linseed Cake, 2 parts.

THE DENTITION OF THE PIG.

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IN these 'Transactions' for 1930 a preliminary note was published in which some account was given of an investigation into the dentition of the pig as indicative of age. Attention was therein especially directed to the time of eruption of four permanent teeth—namely, the third or corner incisor, the canine or tusk, the first premolar and the first true molar. It was indicated wherein the Edinburgh specimens agreed or otherwise with statements previously authoritatively made and hitherto accepted by those whose interest lies in the pig as an exhibition animal. Subsequent to the publication of the above note the investigation has been continued, and has now been applied to 670 specimens. Attention has been more particularly directed to the question whether, from the state of the teeth, the ages of six, nine and twelve months can be determined with a satisfactory degree of certainty. At any time the reason for concentration on these ages would have been obvious to breeders and exhibitors; but an additional reason is furnished by the publication, within the past year, by Major Devine and Captain Dawes of conclusions at which they have arrived as the result of an independent inquiry.[1] These writers are evidently convinced that the state of the teeth is a useful guide to the determination of age—a matter upon which there is reasonable room for difference of opinion.

The present notes are solely concerned with those permanent teeth that normally erupt before the animal has reached the age of one year. In the order of their appearance these are: (1) the first true molar, that is, the first 'molar' that has no representative in the milk dentition; (2) the first premolar; (3) the third or corner incisor; (4) the canine or tusk; and (5) the second true molar. Fig. 1 shows the characteristic form and relative position of these teeth, and the chart (Fig. 2) indicates the periods during which they have been found in process of eruption in the Edinburgh specimens.

Since it is generally admitted that an examination of the

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[1] "Dentition of Pigs as an Indication of Age." 'Pig Breeders' Annual,' 1931-32, pp. 58-68, 4 figs.

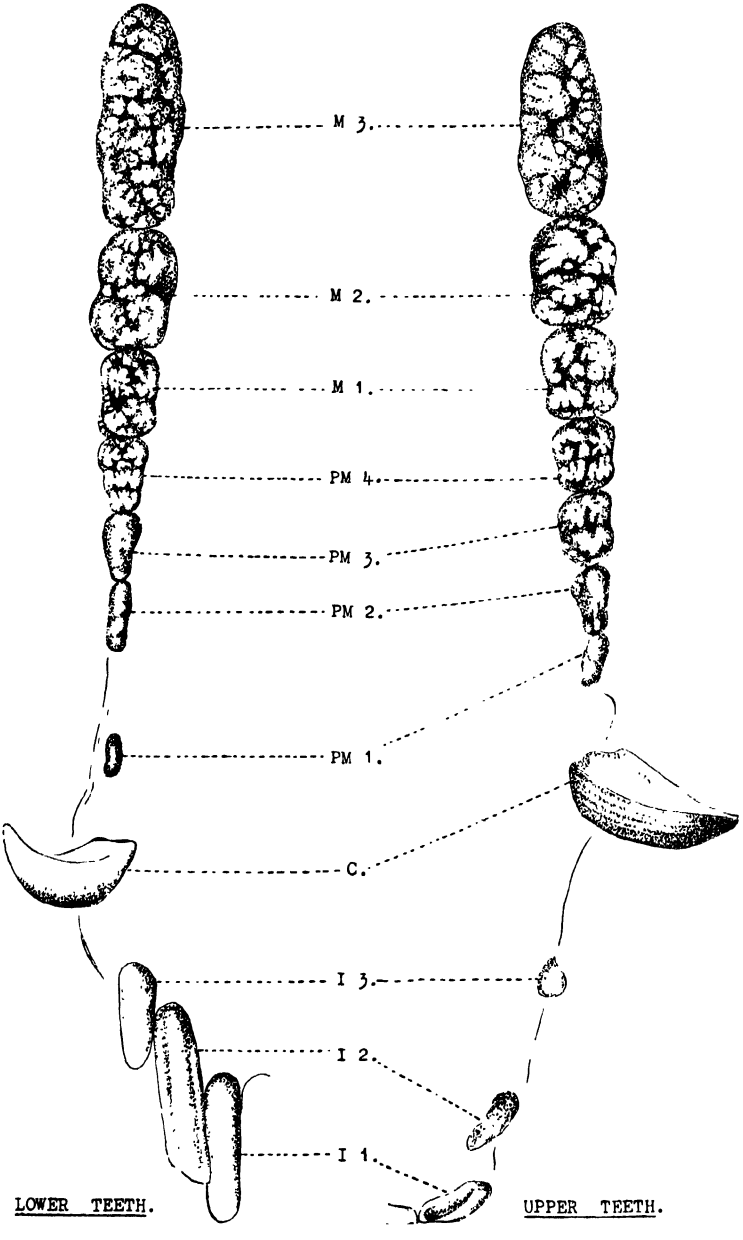

Fig. 1.—*Diagram of the unworn permanent teeth of the pig.*

I 1, First ("central") incisor; I 2, second ("lateral") incisor; I 3, third ("corner") incisor; C, canine (tusk); PM 1, first premolar ("the premolar"); PM 2, PM 3, PM 4, second, third and fourth premolars ("first, second and third molars"); M 1, M 2, M 3, first, second and third true molars ("fourth, fifth and sixth molars").

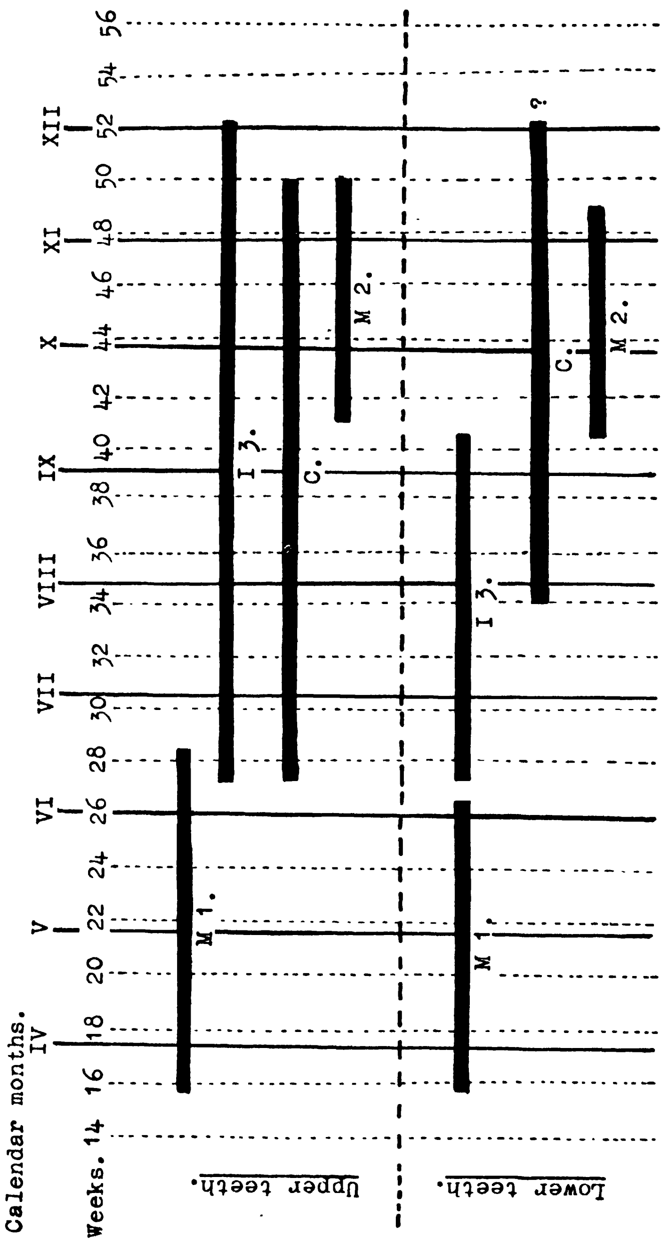

Fig. 2.—*Chart to show the period of eruption of the first true molar (M 1), third (corner) incisor (I 3), canine or tusk (C), and second true molar (M 2), as found in the Edinburgh specimens.*

teeth in the upper jaw of a living pig is highly inconvenient and not likely to be practised commonly, no detailed comment will be made here concerning their periods of eruption. The information conveyed by the chart will, in the main, be held as sufficient. What follows, therefore, relates almost entirely to the teeth in the lower jaw.

(1) The first of the five above-mentioned teeth to appear is the *first true molar* (M 1 in all the figures and the chart; frequently referred to by writers as the 'fourth molar,' because it is the fourth tooth behind 'the premolar'). In the notes published in 1930 it was stated that it seemed likely that this tooth may erupt at any time from the 15th to the 26th week, and the examination of additional material has done nothing to cause material alteration of the statement. The youngest specimen in which it is present is 15 5/7 weeks old (Fig. 3); and the oldest in which the tooth is in process

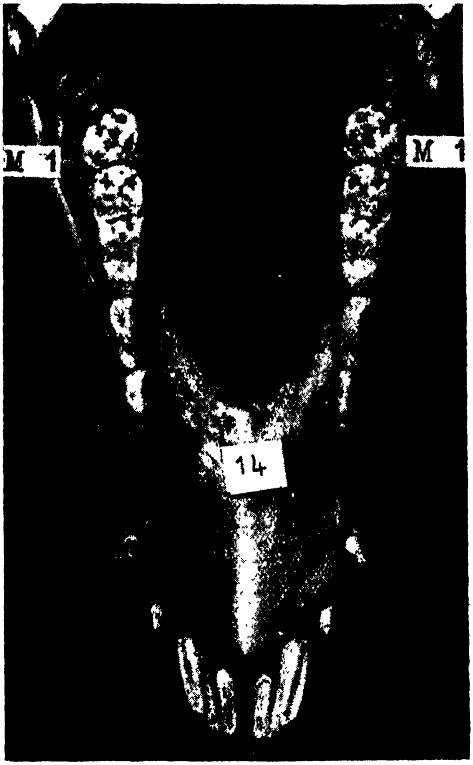

Fig. 3.—15 5/7 *weeks old. The youngest specimen in which the first true molar* (*M* 1) *is in process of eruption.*

of eruption is aged 26 3/7 weeks (Fig. 4). It therefore seems probable that, roughly speaking, the lower tooth may be cut at any time from approximately 3½ months to just over 6 months; that is, the period of eruption extends over about 11 weeks.[1] From this it is evident that, while it may be safe to say that a pig in which the tooth is in process of being cut is not more than six months old, there is always the possibility that the animal may be not much more than half this age.

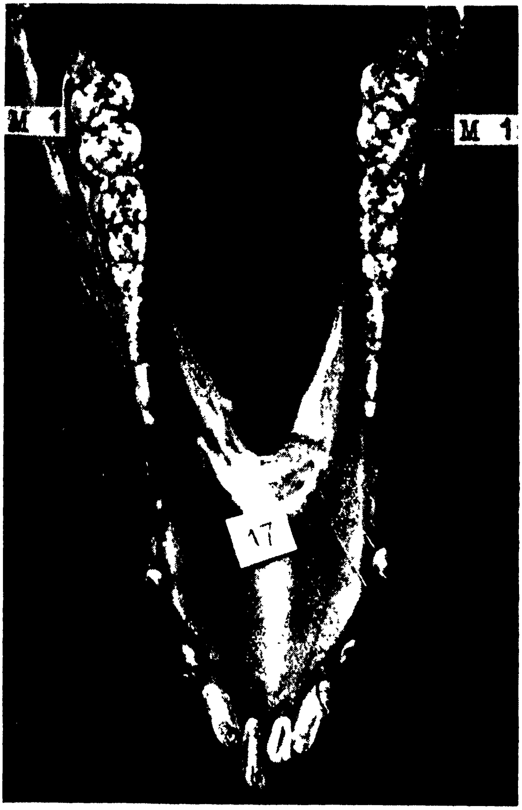

Fig. 4.—26 3/7 *weeks old. The oldest specimen in which the first true molar* (*M* 1) *is in process of eruption. The gum still covers a small part of the crown of the tooth.*

The long period of eruption exhibited by our specimens is in conflict with statements made by other observers.

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[1] The corresponding tooth in the upper jaw, it will be observed from the chart, has a slightly longer eruption period—namely, about 13 weeks.

Brown,[1] for example, was obviously of opinion that the eruption of this tooth is 'remarkably regular' at about the fifth month; and Sisson and Ellenberger and Baum give the period of eruption as from four to six months. The views of the latest observers, Messrs Devine and Dawes, are not so easy to determine precisely, for they say in one place that they "have repeatedly found the fourth molar through the gum in pigs between the ages of five and six months, *but in such cases the tooth shows signs of early eruption*"; [2] and in another place that "the *eruption* of the fourth molar is fairly regular within a period of six to eight weeks from four and a half months to six months."

It is conceivable that diversity of statement may be due, in part at least, to what different observers mean by the tooth being 'cut' or 'erupted.' The crown of the first molar is of some considerable size, and time is necessary for it to become entirely uncovered by the gum. If, therefore, one writer regards the tooth as being 'cut' as soon as any part of its crown is uncovered, while another demands that the whole of the crown must be free, their statements cannot be expected to agree. In the paragraphs above referring to the Edinburgh specimens, the expression 'in process of eruption' has been used to signify that some part of the crown was still covered by the gum.

But whatever expression is used and however interpreted, it is clearly unfair to suggest that because the tooth is exposed the possessor must be regarded as six months of age.

(2) The lower *first premolar* is very obviously completely worthless as an indicator of age. From the specimens examined it is apparently possible for it to be cut at any age from 16 to 42 weeks—and often it is never cut.[3] Because of its very erratic behaviour the tooth is not included in the accompanying chart.

(3) The *third* or *corner incisor* (I 3 in the photographs and the chart) has received very careful attention because of the great importance other observers have attached to it as a guide to age. The specimens in which this tooth has been the special object of examination number 276—a number that may reasonably be claimed as sufficient to yield reliable evidence.

The youngest specimen in which a permanent corner incisor is present is 27 1/7 weeks old. In this specimen both upper permanent teeth are present; but only the right lower tooth has erupted, the left temporary tooth being still present (Fig. 5). That the tooth ever appears before the 27th week seems very unlikely, for 29 animals, ranging in age from 25 weeks to 26 6/7 weeks inclusive, have been examined and in none of them was there the least sign of the eruption of the incisor. Out of 15 animals of 27 to 27 6/7 weeks of age inclusive only three possessed erupting corner incisors.

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[1] The titles, &c., of publications by authors mentioned herein are given in the 1930 report.

[2] The italics are not in the original.

[3] In the 1930 report it was stated that the upper first premolar has an eruption period from slightly less than four to slightly more than five months of age. Specimens acquired since this statement was made indicate the need for material revision. Specimens of the age of 34 4/7 weeks, and even 42 1/7 weeks, show the tooth in process of eruption.

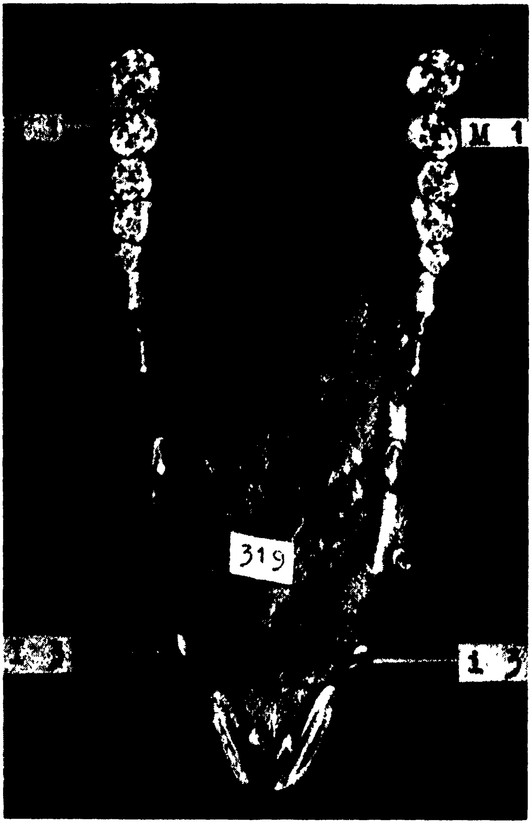

Fig. 5.—*27 1/7 weeks old. The youngest specimen with a permanent corner incisor (I 3, right tooth). The left temporary tooth (i 3) is still present.*

It seems fairly safe, therefore, to conclude that very few, if any, pigs of exactly 6 months (26 weeks) have begun to cut the corner incisors. But the earliest age at which the tooth may be cut is not of such importance as the age at which eruption ceases. In the 1930 report it was said that there was strong probability that the end of the eruption period would be found to be somewhere in the neighbourhood of 10 months. More abundant material has supported the supposition. In one pig, aged 40 4/7 weeks, the temporary corner incisors had been shed, but there was no trace of a permanent tooth, and in another animal of the same age (Fig. 12) the temporary incisors were still in position. In animals of all ages from the 27th to the 40th weeks inclusive, instances have been found in which either the temporary tooth was present, or had been shed without its successor having begun to make its appearance. Out of 276 specimens

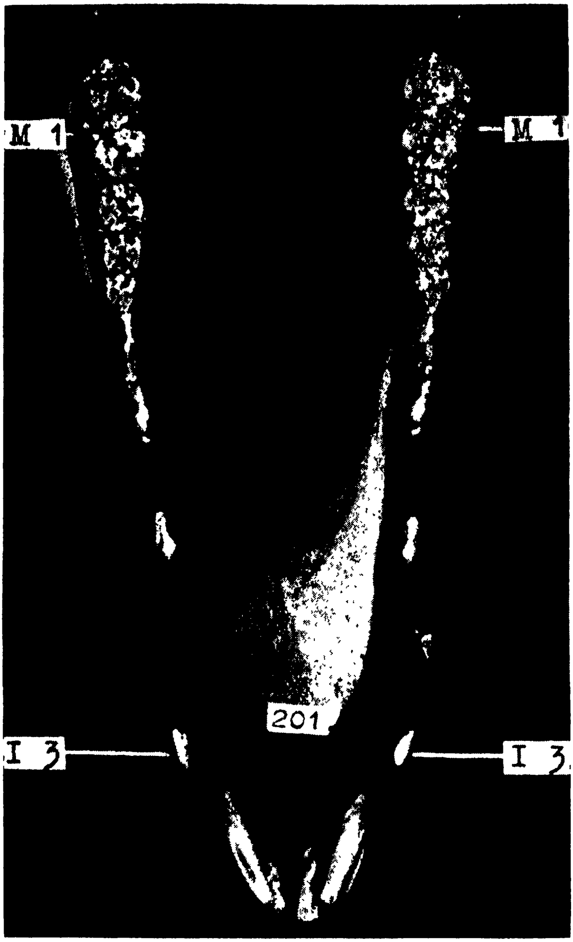

Fig. 6.—27 3/7 *weeks old. Both permanent corner incisors* (*I* 3) *are present.*

specially examined, 126 had no trace of a permanent corner incisor.

Stated briefly, the period of eruption of the lower corner incisor has been found to extend from the 27th to the 40th week; that is, from just over 6 months to about $9\frac{1}{2}$ months.[1]

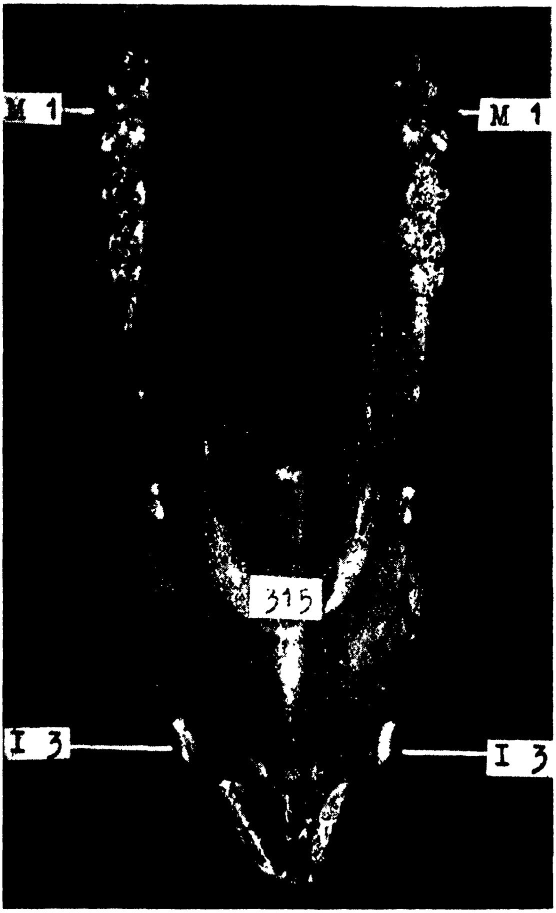

Fig. 7.—30 3/7 *weeks old. Both permanent corner incisors* (*I* 3) *are present. Compare with* Fig. 8 (*same age*).

In the course of the examination of specimens in which the corner incisor is present, an attempt was made to estimate the length of time that might have elapsed since a given tooth first pierced the gum. At one time it was thought that size might furnish help; but the attempt had to be abandoned, for it was soon found that the growth in size of the tooth is both slow and erratic. In animals in which there was little doubt that it had been cut for some weeks at least the tooth was remarkably small. This is illustrated by the specimen from which Fig. 14 was taken. In this animal, notwithstanding the fact that it had reached the age of 66 weeks, the tooth was very small. Indeed, though data for discussion is not sufficiently abundant, the temptation to regard the third incisor as being in some measure degenerate is very strong.

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[1] The corresponding tooth in the upper jaw has evidently an even longer period of eruption—namely, certainly from the 27th to the 52nd week inclusive, and possibly even longer than this.

Because of the great importance in which it has been held—and is still held—as a guide to age, it seems necessary to quote once again statements contained in authoritative publications respecting the period of eruption of the corner incisor. Sisson gives the period as being from 8 to 10 months. Sir George Brown, the accepted British authority, put the eruption period within much narrower limits when he said: "their (the corner incisors') points (are) through the gum at seven months, but in many cases the temporary organs remain until the animal has reached the age of eight months." Upon Brown's assertion rests the current standard by which a pig is judged to be at least six months old, a standard that has recently been criticised by Major Devine and Captain Dawes. The last-named observers, though they mention two instances in which they found a permanent corner incisor erupting at six months and sixteen days (presumably 28 2/7 weeks), say that "the average time of eruption of the permanent corner teeth may be taken as being 7½ to 8½ months definitely." They are of opinion that there is "abundant evidence to prove that the present six months' standard is too lenient"; and they suggest that the rule be altered to read: "Pigs having either one of their permanent corner incisors cut will be considered as exceeding six months of age." On mature consideration this amendment will probably not be regarded as so satisfactory as it appears at first glance, for it obviously affords no guide to the estimation of possible excess over six months. It is quite possible that the rule would have to be applied to an animal as much as nine months of age, or even more; for, as shown above, animals as old as forty weeks may not possess permanent corner incisors. The authors would doubtless consider that an unfair construction had been put on their amendment were the converse to be regarded as equally applicable: "Pigs having neither of their permanent corner incisors cut will be considered as not exceeding six months of age." The converse, of course, as thus stated, is absurd, and the authors of the amendment would be rightly indignant were it suggested as being the natural corollary of their proposed alteration of the rule. The absurdity is perpetrated here solely for the purpose of emphasising what appears to be a manifest weakness of the corner incisor as an indicator of age. The age-variability of its eruption cannot be too strongly emphasised, and it may be permissible to put the matter in another way. If a corner incisor, whether large or small, is present the pig is certainly

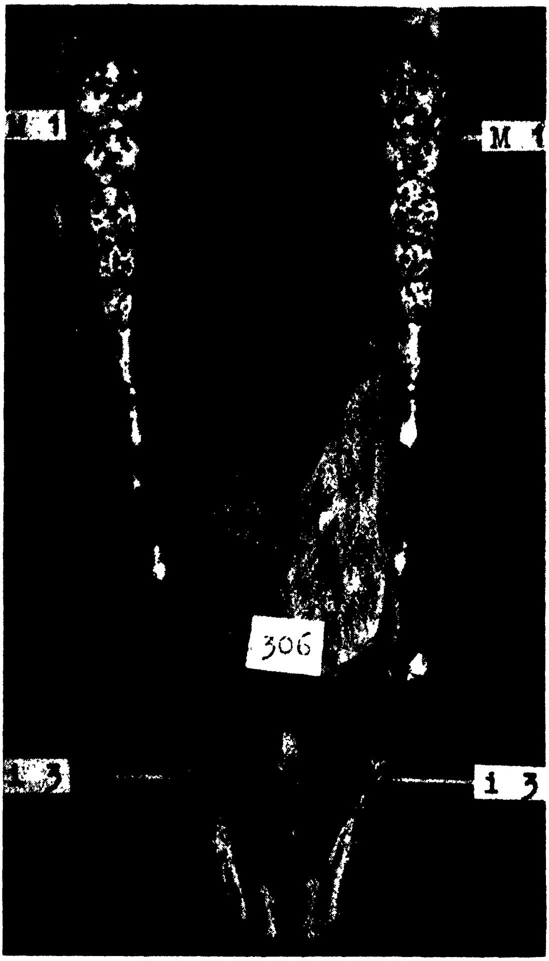

Fig. 8.—30 3/7 *weeks old. Both temporary corner incisors (i 3) are present. Compare with* Fig. 7 (*same age*).

6 months (26 weeks) old; but unfortunately the tooth is of very little practical value in determining how much older than 6 months the possessor may be. Even if no more than the tip of the tooth is through the gum it is possible that the pig may be anything up to 40 weeks old. And, as already said, the actual size of the tooth is of no practical assistance. It is, therefore, not in the least difficult to visualise a pig of 40 weeks that, under the suggested rule, might be held to be only just over six months of age. And, on the other hand (and this is a point of even greater importance), a pig of whatever age, provided that it still retained its tem-

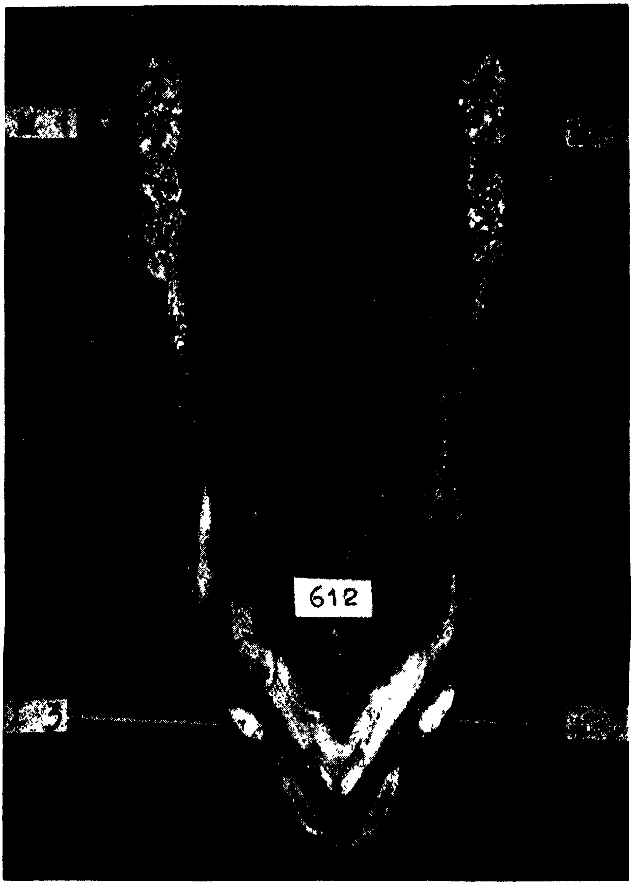

Fig. 9.—31 4/7 *weeks old. Both permanent corner incisors* (*I* 3) *are present and of good size. The corresponding upper teeth are both temporary.*

porary teeth, could be claimed as *not* 'exceeding six months of age.' In this connection reference should be made to Fig. 8 (No. 306, 30 3/7 weeks old), Fig. 10 (No. 376, 34 4/7 weeks old) and Fig. 12 (No. 495, 40 4/7 weeks old). It may be added that, in all three specimens here illustrated, no help would be gained by an inspection of the upper teeth, for these also are temporary. In this connection also specimens Nos. 376 and 377 (Figs. 10 and 11) are especially interesting.

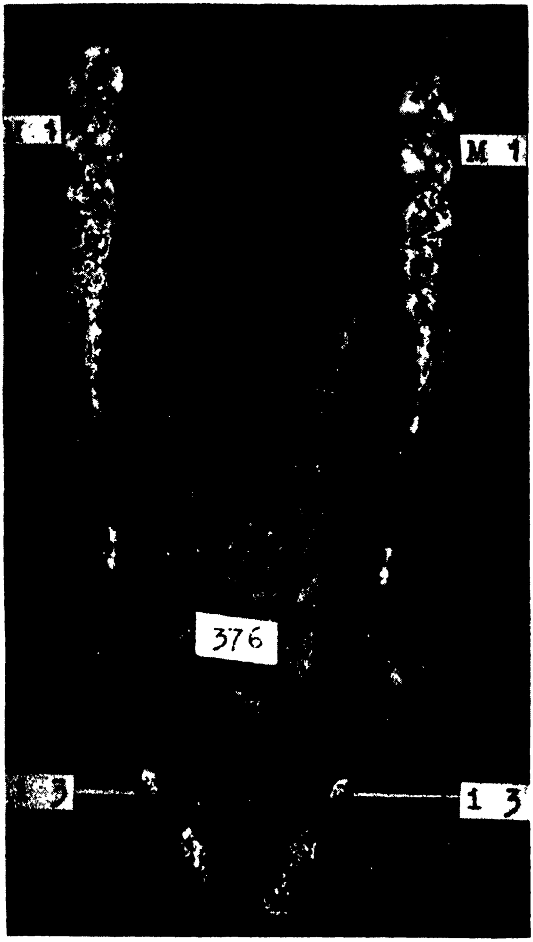

Fig. 10.—34 4/7 *weeks old. Both corner incisors* (*i* 3) *are temporary. Compare with No.* 377 (Fig. 11), *a member of the same litter killed on the same day, in which the corner incisors are permanent.*

They are from the same litter and were killed on the same day when 34 4/7 weeks old; that is, they were both two months older than the half-year. The amended standard would rule No. 377 as being more than six months old;

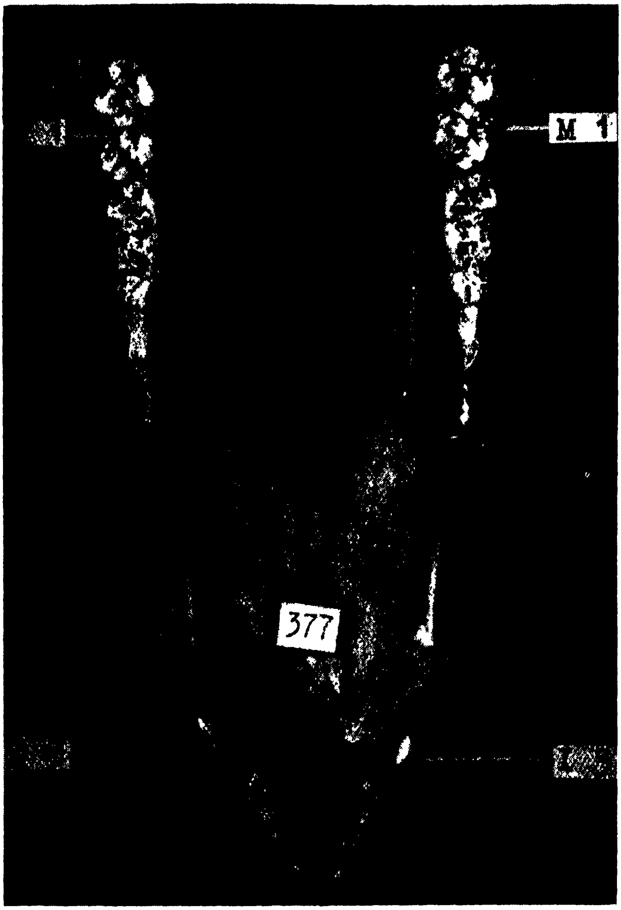

Fig. 11.—34 4/7 *weeks old. Of precisely the same age as No.* 376 (Fig. 10). *The corner incisors* (*I* 3) *of this animal are permanent.*

while No. 376 could be claimed as not exceeding six months—two months less than its actual age.

A first glance at the accompanying chart may possibly suggest that the consideration of some other tooth along with the corner incisor will yield information of value. For example, the fact that the period of eruption of the first molar is shown to end before that of the incisor begins appears to hold out promise. And it is true that if the first molar has been cut and the corner incisor has not, the pig *may* be only a shade over six months of age. But unfortunately the same condition may be exhibited in the dentition

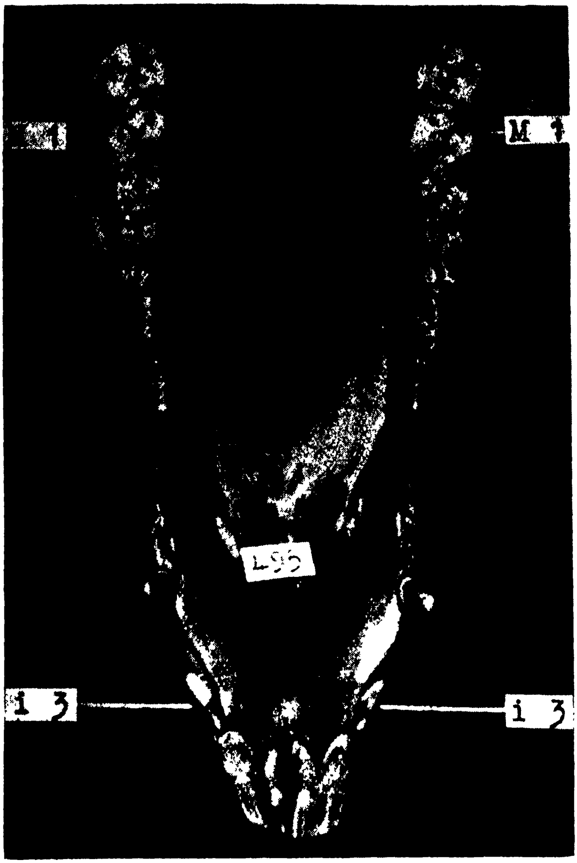

Fig. 12 —40 4/7 *weeks old. The age of the animal notwithstanding, the corner incisors* (*i* 3) *are temporary. The corresponding upper teeth are also temporary.*

of an animal of, say, four months. And, of course, the condition would be maintained until the corner incisor made its appearance, however late that may be.

Then it may be asked: Does the eruption of the tusk help, and, if so, how much?

(4) The *canine* or *tusk* (C in the figures and chart) of the

lower jaw has a long period of eruption ranging from the 34th week to a year—and possibly later. If the tusk is present, whether large or small, in a pig in which the corner incisor *is being cut*, it seems fairly safe to say that the animal is from 8 to 9½ months old. But this state of the dentition is not found so often as to be of great practical use, and consequently we are forced to conclude that the tusk does not afford any material amount of help.

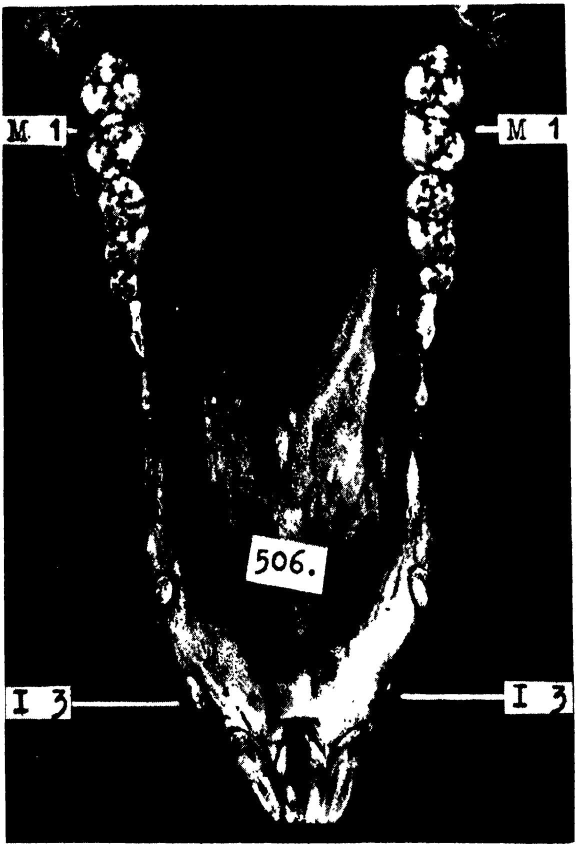

Fig. 13.—42 *weeks old. The corner incisors* (*I* 3) *are both permanent, but the left tooth only just pierces the gum.*

(5) The period of eruption of the *second true molar* (M 2 in the chart and Fig. 14, commonly called the 'fifth molar' by writers in this country) is variously stated by different authorities. Brown says that it is cut between 10 and 12 months; Sisson gives a longer period—namely, between

8 and 12 months; while Ellenberger and Baum extend the period still more, giving the early age for its eruption as 7 months and the late age as 13 months. With these figures before us it is of considerable interest to find that, in the

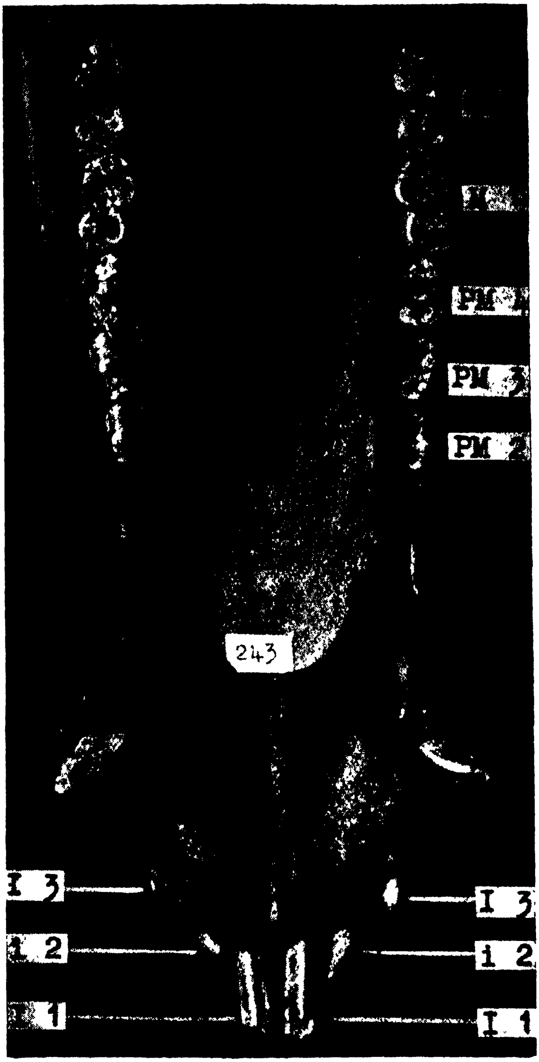

Fig. 14.—66 *weeks old. Considering the age of the animal, the corner incisors* (*I* 3) *are both very small.*

investigation now being reported, the youngest animal in which a lower second molar was being cut was 40 3/7 weeks old, that is approximately 9 months and 1 week.[1] That an earlier eruption was not found cannot be said to be due to lack of material, for 127 specimens from the 35th week (8 months) to the 40th week inclusive have been examined; and of these only three—all over the bare 40 weeks—had the lower tooth coming through the gum.

The oldest specimen in which the lower second molar was absent was 49 weeks old.[2] The lower tooth, therefore, has been noted to have a period of eruption extending over 9 weeks (from the 40th to the 49th), but it must be admitted that the number of specimens from animals of 50 weeks and over has not been great. It must therefore be held as possible that more abundant material might furnish evidence of eruption at a later age. Nevertheless it seems reasonable to assume that if the tooth has not appeared the pig is not more than 1 year old; but, on the other hand, if the tooth is present the animal is at least 9 months of age.

Taking the second molar in conjunction with the corner incisor gives some information, but it is doubtful if this is of great value. If the corner incisor has been cut and there is still no sign of a second molar it seems improbable that the pig is older than 9½ months; but this is all that can be said with certainty, for manifestly this state of the dentition is also exhibited by animals as much as 3 months younger.

SUMMARY.

The periods of eruption of the five lower teeth that normally appear before the age of 12 months have been found to be as follows:—

First true molar.—From 15 5/7 to 26 3/7 weeks = nearly 11 weeks.

First premolar.—From 16 to 42 weeks, and frequently the tooth is absent altogether. Its eruption is, therefore, held to be of no value as an indication of age.

Third or *corner incisor.*—From 27 1/7 to 40 4/7 weeks = over 13 weeks.

Canine or *tusk.*—From 34 to 52 weeks (probably more) = at least 18 weeks.

Second true molar.—From 40 3/7 to 49 weeks = 8½ weeks; but there is the possibility that more material may extend the period beyond the 49th week.

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[1] The youngest specimen in which the upper second molar was erupting was aged 41 1/7 weeks.

[2] The upper tooth was absent in an animal 50 weeks old.

The periods of eruption as given above seem to be of such length as to rule out dentition as a really accurate and satisfactory guide to the age of the pig. It is doubtful if the breeder and exhibitor will be satisfied to know that, while a pig that is cutting its first molar can be only a day or two older than six months, it may be not a great deal older than half this age. Or that, though an animal in which the corner incisor is being cut is not likely to be older than 9½ months, it may possibly be as much as 3 months younger.

The canine or tusk cannot be relied upon to give information of value, and the period of eruption of the second molar is such as to leave room for much the same kind of doubt as that connected with the first molar, though admittedly in a somewhat less degree.

ACKNOWLEDGMENTS.

While thanks are again tendered to those mentioned as having furnished material for the report of 1930, it is felt that special mention must be made of the kindness of Mr R. E. Dorrell of Epsom, who has supplied the greater part of the specimens acquired since the first report was published. Monetary assistance has again been forthcoming through the Department of Agriculture for Scotland.

INSECT AND OTHER ENEMIES IN 1931.

By R. STEWART MACDOUGALL, M.A., D.Sc., F.R.S.E.,
Consulting Entomologist to the Society.

WARBLE FLY EXPERIMENTS.

IN 1931 there was a great extension of the work in Scotland, an extension which would have been impossible but for the assistance and co-operation of the three Agricultural Colleges—The Edinburgh and East of Scotland College, The West of Scotland College and The North of Scotland College. This combination not only secured for the work the sympathetic interest of the farming community, but the three Colleges of Agriculture solved the problem of organisation by the friendly and most valuable help of their various County Organisers. To all these the Committee expresses its most cordial thanks. The County Organisers, always busy enough with their normal routine work, were, in many cases, still able to find the time—sometimes to assist in the experimental work themselves, sometimes to supervise it and always to keep in touch with and encourage it.

The Committee were fortunate, too, in securing the assistance of a number of skilled workers who were University graduates in agriculture or holders of Agricultural College Diplomas. The experimental work was thus in the hands of workers who brought knowledge to bear on their work, and the experiments may be looked upon as thoroughly controlled experiments. The service of such skilled and knowledgeable men were not available for intensive work over the warble season until the Spring Term for University and Agricultural College had ended; and this is one of the reasons why, with voluntary workers, one has not been able to start the work until after the third week of March, by which time a number of the earliest Warble Fly larvæ had completed their growth, squeezed themselves out of the cysts and fallen away from the back for pupation. In any annihilative campaign, experience in Scotland has shown that the first dressing against the larvæ might well be towards the end of the second week of March, and should not be later than the third week of March. Even with the earliest date some larvæ might be missed. From February till May the presence of the Warble Fly larvæ in the skin of the back is easy to tell by touch and by the eye. In January, June and July also one can find swellings and larvæ on animals in the field.

In the first and second weeks of February 1931, warbles were appearing in considerable numbers on hides coming into the Edinburgh market. Early warbles were found in Dumfriesshire in February. South of Roxburgh, the falling away of larvæ was noticed in the second week of March. In Dumfriesshire and Wigtownshire considerable numbers of larvæ had issued by 20th March ; and as far north as Sutherland warbles were ripe in the third week of March.

Extent of the Work.—In 1930 warble experimental work was undertaken in seven Scottish counties. In 1931 no fewer than twenty-two counties took part, either in intensive work with four dressings or three dressings spread over the warble season, or else in demonstration work which had the value of testing the dressings, and also of interesting others in the county but outside the particular area of demonstration. To the twenty-two participating counties the Western Isles have to be added. There remain in Scotland for work in 1932, and so far unreached in the present warble campaign, Shetland, Ross and Cromarty, Inverness-shire (the mainland), Banff, Forfar, Bute and Arran, and Stirling.

One is glad to report encouraging features in the work :—

(1) Increased interest in the warble question.

(2) An increasing number of farmers who, convinced of the excellent results attending the Derris dressings, dress their own cattle.

(3) The proved progressive reduction in warbles during the warble season, consequent on the three or four repeated dressings.

(4) In some cases a reduction in warble infestation in areas where experimental dressing was done last year. Here, however, one must be careful, for there can be other factors besides the 1930 dressing factor.

(5) The cumulative evidence that in ' Polvo ' or other reliable Derris preparations the farmer has at hand a cheap (but not nasty) dressing, not difficult to apply, to be relied on as efficient in killing the warble larvæ, and without harm to the health or hide of the treated cattle.

Three different kinds of dressing were tested, viz. :—

(1) ' Polvo ' soft soap as in 1930.

(2) Warble Fly Powder (with the soap already incorporated and only needing the addition of water).

(3) A liquid Derris preparation.

The first two were abundantly successful. Ten thousand copies of a very full report have been distributed to the farmers of Scotland by the Highland and Agricultural Society. The Report is illustrated with eleven figures bearing on the work, and besides analysing in detail the work and the results in the twenty-two counties, the Report includes special notes on the extraction of larvæ; what Derris is; animal colouration in relation to Warble Fly attack; and Tables relating to the percentage of warbled hides passing through Scottish markets.

THE HAY OR PALE MOTTLED WILLOW MOTH (*Caradrina quadripunctata*).

Though crowded out from previous Reports I would like to record some cases where the caterpillars of this moth proved a great nuisance in dwelling-houses and shops. *C. quadripunctata* is a Noctuid moth, somewhat variable in the ground colour of the fore-wings, which typically are yellowish or putty-like to darker, mottled and spotted; the hind-wings are white with dark edges and a series of brownish lines that run out to the dark edge. The colour of the body resembles that of the front wings. The dark eyes are conspicuous. The moths fly at dusk and rest in the daytime, hidden or sheltered among thick herbage, in hayricks, and sometimes indoors. The species is common all over England, Scotland and Ireland, and has a wide distribution all over Europe except in the coldest parts, Asia and Africa, and it has been carried to Canada and the United States. With us, July, August and early September are the months when the moth is on the wing, but examples are found both earlier and later.

The caterpillar, short and stout, is grey or reddish-grey with darker, somewhat inconspicuous and interrupted lines on the back and sides; the head is dark, as is a plate behind the head; the spiracles show as dark spots down the sides; here and there are hairs that arise from little swellings. The caterpillars are found from late summer or early autumn on to the following May. They feed on grasses, wheat, peas, chickweed. When in a young state they are harvested with the hay and corn and peas, and in hayricks and in stores and outhouses, to which crops have been carried, they continue to feed on the new hay and the herbage found in and among hay. Theobald [1] has recorded a case where the caterpillars, suspected to have come from the thatch, entered a fruit store and did great damage to stored apples—eating large pieces out of the sides and tunnelling into and eating out the core.

When full grown each caterpillar spins-up in a loose web in which husk and seed and portions of food plant are entangled. There may be somewhat extensive collections of these webs under cover among the stored material, on and over the woodwork in warehouses, stores, outhouses and in crevices in woodwork and wall. The caterpillars that spin-up in the open may do so at ground-level. The full-fed caterpillar remains passive over winter as caterpillar, not pupating until the next May or later, when the red-brown chrysalids are found. In an infested store the windows may be darkened by the number of moths coming away after pupation.

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[1] 'Journal of the South-Eastern Agricultural College,' Wye, Kent, 1913.

Invasion of Houses.—In the year of which I write, caterpillars of Caradrina came to me in late September, October and early November from the neighbourhood of Edinburgh, Linlithgow, South Perthshire and Dumbartonshire. Specimens and complaints came to me from Medical Officers of Health and Sanitary Inspectors, to whom complaints had been made of the 'nuisance.' In the Edinburgh case the caterpillars had invaded the dwelling-houses and a grocer's shop from some haystacks built in an adjacent field in the second week of September. I took a number of caterpillars from the window of the shop and also received specimens in the neighbouring houses. The caterpillars were found climbing the walls and entering houses by windows and by chinks. One old lady told me that the caterpillars were obvious at night, and that as she slept with her mouth open she was afraid to go to sleep. In another case, when a schoolgirl's mid-day lunch was opened out at school, caterpillars were found in the parcel. In the Dumbartonshire case thousands of the caterpillars were taken in a group of houses, and the matter was taken up by the County Council; the haystacks in an adjacent farm were blamed as the places whence the invaders had come. Great numbers of the caterpillars were destroyed in sawdust soaked in disinfectant that had been laid down in a protective ring.

In Perthshire the house had been invaded from a neighbouring stable. In Linlithgow the houses were invaded from neighbouring haystacks.

There are similar records in other years from England and Ireland.

FLEAS.

Fleas are wingless insects but are good jumpers—measured jumps of *Pulex irritans*, the flea of human beings, reaching 7½ inches in height and 13 inches in length; but these are champion figures, other species being credited with more modest performances. Such knowledge has some practical importance, for some fleas act as the carriers of dread diseases, and one has to know the height at which a patient's bed and bed-clothes must be from the floor to be free from infection.

Fleas are external parasites of warm-blooded animals, their various mammal and bird hosts being visited for a meal of blood, a blood diet being necessary for successful egg production and hatching. Some fleas do little more than visit a host animal for blood and then leave it, while other species persist for longer or shorter times on the host. The flea is not necessarily confined to one species of host; there may be a favourite host, but other species of host may be attacked.

Features in the structure of the flea (Fig. 15) are: the laterally compressed body; the small head, with two antennæ or feelers which lie protected in little pits or grooves; the piercing and blood-sucking mouth-parts (in both male and female); the pump, by which the drawn-up blood is pumped back into the stomach; the salivary glands, whose secretion entering the wound keeps the blood from coagulating, the secretion also containing little yeast-like bodies that are the probable cause of the irritation that follows the bite of the flea; the thorax, with its three joints, these being separate (not a usual thing in insects); the six legs, each ending in two claws; the joint of the leg nearest to the body large and flat; the hind pair of legs specially long and adapted for leaping; the abdomen of ten joints, number nine having on its upper surface a special sensory plate (and claspers in the male); the more or less bristly body, some species like those of dog and cat and fowl having 'combs' of spines at side or back of head; ten pairs of spiracles or breathing

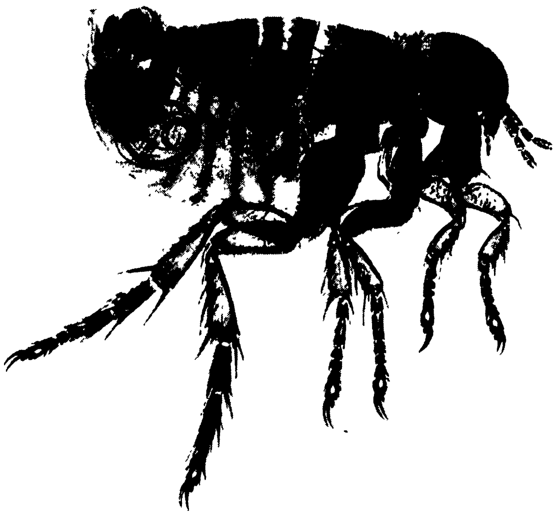

Fig. 15.—*The Flea* (Pulex irritans).
Magnified.

pores along the sides of the body—viz., three pairs on the thorax and seven pairs on the abdomen.

Life History.—The flea has four stages in its life history—adult, egg, larva, pupa (in cocoon). After pairing, the female lays her eggs on the host or near the host, or on the mat on which the host is lying, or in the nest of the host; the eggs, though they may be laid on the host, are not glued to the hair or feathers (like the eggs of lice), but easily fall away. From the egg there hatches a legless, slender, maggot-like larva (Fig. 16), which when full grown measures, in the case of the flea of human beings and of the dog flea, under $\frac{1}{5}$ inch; the joints of the body are provided with bristles or hairs, and by means of these, progressive and wriggling movements are accomplished. The food of the larva is not liquid food as in the adult flea, but the larva has jaws or mandibles, which enables it to feed on solid particles. The larvæ feed on morsels of dried, digested or undigested blood that have been passed by the adult fleas and on all kinds of organic débris present in their dusty and dirty environment. When full-fed the larva becomes a pupa under cover of a cocoon of silk; the cocoons are generally hidden by their covering of dust or other débris. When the adult stage has been attained the flea issues from its cocoon.

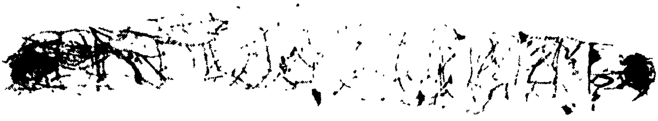

Fig. 16.—*Larva of Flea.*
Greatly magnified.

The length of life of the flea, in its different stages, is very variable, depending on whether the environment is favourable or no. Very important are favouring temperature conditions and the presence of a certain amount of moisture. Too hot and dry conditions greatly disfavour development and cause mortality.

Economic Importance.—When in numbers on a domesticated animal or on a fowl the irritation and restlessness following the wounding for the meal of blood brings loss of condition.

Of great importance is the fact that fleas act as carriers of various diseases. The Dog Flea, the Cat Flea and the Flea of human beings can act as the intermediate host of a troublesome and very common tapeworm (*Dipylidium caninum*).

The eggs of this tapeworm are taken up by the larva of the flea, and in the flea the egg hatches; the early stage of the tapeworm passes by way of the flea larva and pupa to the adult flea, and the immature stage of the worm in the adult flea can go no further unless the infected flea is swallowed by a dog, as happens when the dog licks itself; or if, accidentally, a flea harbouring the young stage of the tapeworm reaches milk that chances to be drunk by a child, the tapeworm may become adult in the food canal of the child.

Bubonic plague, which periodically in the East decimates whole populations and which is not unknown in England (though no longer, owing to improved hygiene, with the virulence of 1665), is due to a bacterium (*Bacillus pestis*), whose normal host is the Indian Rat Flea (*Xenopsylla cheopis*). This flea carries the bacillus from rat to rat, and so many rats die from the disease that the infected fleas, failing to find rat hosts in sufficient number, leap on to man and bite him and pass the infection to him. It has been proved that the Indian Rat Flea is not the only carrier, but that the flea of human beings (*Pulex irritans*) and the common Rat Flea of temperate countries (*Ceratophyllus fasciatus*) can also convey the plague bacillus to man, while our British rats can act as hosts of the bacillus.

For distinction of flea species the microscope is necessary, and some skill in preparation of the specimens. Had space permitted I would have given a key to several of our commonest fleas to try and tempt some student to interest himself in this group of insects. For any such worker a set of keys for the running down of the fleas recorded from the British Isles has been provided by the Hon. N. Charles Rothschild in pages 49 to 112 of the 'Entomologists' Monthly Magazine' for March 1915. This synopsis of the British fleas is illustrated by ninety-six black-and-white drawings by Dr Jordan.

THE SILVER FISH OR SUGAR FISH (*Lepisma saccharina*).

In my Report for 1927 this insect was named as troublesome in different houses and offices in Edinburgh, and complaint also was made from Stirlingshire. Now specimens have been sent to me from near Dundee as infesting a kitchen in a mansion-house. All my correspondents remark on the quickness of movement and the nocturnal habits of this insect.

Lepisma belongs to the Order of Bristle-tails or Thysanura, so named from the three long, fine and brittle bristles that project from the last joint of the body; the insects of this Order are primitive, being wingless and without metamorphosis in their life history. Lepisma measures $\frac{1}{3}$ inch in length; the body is elongated, and shows the typical insect parts of head, thorax, abdomen. The head carries two long feelers, eyes, and the mouth-parts which have toothed jaws. The thorax bears six legs, each leg ending in two claws.

The insect has a silvery or glistening appearance, owing to the minute scales which cover the body.

The life history is simple. The eggs—the number laid by each female is small—hatch into little creatures which resemble the parent in outline. The young have the same food habits as the parent; they feed and grow and moult and become adult without any pupal or resting stage and without any trace of wings. Though these insects may be present in colonies the rate of growth and the multiplication of the individual is not rapid; their appearance in numbers may be due to their not having been noticed for a long time, as Lepisma is nocturnal in habit, shuns the light, and takes advantage of concealment in such shelter-places as heaps of undisturbed papers, the shelves of books in libraries, behind broken wall-paper, under linoleum and so on.

Very agile, Lepisma is not easy to catch nor to hold when caught. If disturbed, say, in a pile of papers that has been lying for some time, Lepisma disappears in a flash. In trapping some for examination I found that time was saved by sprinkling water round the Lepisma-containing material previous to disturbing it; the surprised and escaping insects were caught in the water.

Indoors in houses, in libraries, in storage places, the Silver Fish can be troublesome from its fondness for starch and materials containing starch; it is destructive to papers, books, bindings, wall-papers, labels in museums, curtains, and where there may be collections or refuse from starchy food materials.

Lepisma, though sometimes a cannibal, is quite harmless to human beings; it is not a disgusting insect like some insects that are not named in polite society; but the curse of the serpent remains on creepy-crawly things, and the presence of Lepisma in houses, even though little or no actual damage may be done, makes people uncomfortable. Recently a case in London attracted a good deal of notice. The proprietress of a Kensington house sued a tenant for six months' rent, nearly £60; the tenant not only refused to pay but counterclaimed for £46 as expenses incurred in moving out before his time, the complaint being that the presence of the Sugar Fish in several compartments rendered the house uninhabitable. The owner of the house lost the case, a decision which was upheld on appeal, although Lord-Justice Scrutton added that both sides had done their best to be stupid. They could have exterminated the beasts and decided afterwards who was responsible.

Control is really not difficult. Books or papers, or stored articles or material, should not be allowed to remain for long periods unmoved and unexamined. Places frequented by the insects should be dusted with fresh Pyrethrum powder. It should be noted, however, that such dusting must be frequent, as Pyrethrum soon loses its insecticidal properties on exposure to air.

A poison bait which is effective in control is a mixture of 12 parts sodium fluoride [1] and 100 parts of flour ; this should be dusted in the places infested by Lepisma. Readers should note that workers with sodium fluoride must not have cuts or wounds on their hands ; the dust too, is irritating to nose and throat.

A bulletin of the United States Department of Agriculture recommends as a poison bait for Lepisma a thin paste made by mixing $\frac{3}{4}$ ounce of white arsenic with a pint of wheat flour and then adding water enough to make a thin paste by boiling. The paste is put on small bits of thin cardboard or paper, these being made into rolls with the paste inside. These baits are placed in all shelter-places likely to harbour the insects.

It should be carefully noted that the two baits named above are poisonous, and that young people should not have access to them.

THE GREENHOUSE GRASSHOPPER (*Tachycines asynamorus*) (Fig. 17).

In my Report on the insects of 1925 I recorded the presence of this interesting alien grasshopper in a large fruit and flower-growing establishment near Glasgow. The insect had been noticed in the plant-houses for some time, and indeed one of the workers, who had been long in service in the nursery, declared that he had known it as present for thirty years. Specially the insect had been noticed in the cucumber and tomato plant-houses. This year again the Greenhouse Grasshopper was reported to Mr Stirton, from whom I received specimens alive and active. The specimens had come from near the same place at Glasgow, so that the alien is holding its own and extending somewhat.

In the Glasgow nursery the grasshoppers were seen not only in the plant-houses but sheltering outside in stacks of turf waiting to be used for the tomato houses ; they had been found as far as 100 yards from the hothouses. The grasshoppers, however, are susceptible to cold, and are more usually found sheltering under boxes and in heated glasshouses, although in examples recorded here the tomato and cucumber houses had not a forcing heat but only a mild heat.

The insects are nocturnal in habit, and may be present without attracting attention other than by the plants spoiled by their feeding.

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[1] The formula is by G. J. Spencer, quoted by Metcalf and Flint.

Considerable numbers have been collected at night, but the grasshoppers still remain.

T. asynamorus is an Asiatic species, Japan and South China being possibly the native home. In commerce this grasshopper has been carried to different countries. In Europe it was first reported from Petrograd, and is now common in greenhouses, as Uvarov has pointed out, all over Europe. In the Far East it is found ' wild ' and in the open.

Typically vegetarian in habit, this Greenhouse Grasshopper, which is an excellent jumper, becomes carnivorous and cannibalistic in absence of its natural food. Of two live specimens received from Mr Stirton the larger, after some hours' imprisonment, made short work of the other.

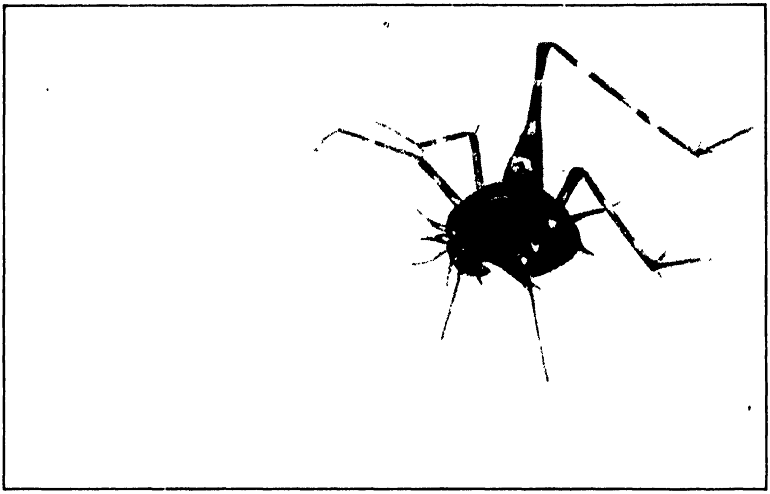

Fig. 17.—*The Greenhouse Grasshopper* (Tachycines asynamorus).

Fig. 17. is, by courtesy, from Bulletin No. 8 of the Bureau of Bio-Technology, Leeds.

LEATHER-JACKETS OR DADDY LONG-LEGS.

In previous Reports I have given rather full notes on Crane Flies or Daddy Long-Legs and their larvæ, known as Leather-Jackets from their tough exteriors. Still, questions continue to be asked from field and golf links. A few points may be emphasised.

The Influence of Weather.—When the larvæ or grubs are present the nature of the weather at the time of germination and brairding of the corn is important. If, owing to cold, the germination of the seed is slow, then the grub can be destructive. Rennie pointed out [1] that plants attacked before the period of secondary growth, at which the adventitious root system becomes established, were liable to be killed. "At a later stage of the plant the grub is active, but although it damages it does not kill the plants. Growth continues, and the capacity to tiller is not destroyed." In a cold or late district, then, the farmer should consider the wisdom of late sowing.

The Relation of the Number of Grubs to the likelihood of Loss of Crop.—With good farming and manuring and favourable weather conditions for the crop, there may be thousands of Leather-Jackets in the field and the crop yet be safe. This is because the larvæ feed so willingly on and in the pieces of ploughed-in turf. Overcrowding and consequent competition for food result in loss or severe loss of crop, apart from unfavourable climatic factors or slack farming. Rennie's very careful observations in North of Scotland areas led him to the belief that with good farming the number of the grubs present did not become the dominant factor in determining loss of crop unless the number approached about 50,000 grubs per acre.

The Use of Insecticides.—In 1921 two experimenters in the United States, noticing that the Daddy larvæ came more to the surface than had previously been believed, tried successfully a poison bait of Paris Green and bran mash. Mr Hunter, one of the County Organisers of the West of Scotland Agricultural College, found the bait successful against the Leather-Jackets in a neglected garden,[2] and this method of fighting the pest has become common.

There are slight variations in the formula. Packard and Thomson [3] in America used bran, 25 lb.; Paris Green, 1 lb.; water, 3 gallons—the Paris Green being mixed into the bran and water added gradually. This was applied at the rate of 20 lb. per acre.

The West of Scotland recommendation is: Mix 1 lb. Paris Green with 30 lb. bran or thirds, and moisten the mixture with about 2 gallons of water; this quantity serves for an acre. In preparing the bait an old tub is used; alternate layers of bran and Paris Green are placed in the bottom of the tub until the desired amount has been made up; stir thoroughly and add water until the mixture is sufficiently damped to cause the Paris Green to adhere to the bran and yet be dry enough to sow with ease. Two teacupfuls of treacle, added to the water before it is mixed with the other ingredients, make the bait more attractive.

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[1] "The Crane Fly Grub and the Oat Crop," in 'The Scottish Journal of Agriculture,' April 1927.

[2] "The Grub Pest and Paris Green as a Remedy," Bulletin No. 103, West of Scotland Agricultural College.

[3] 'Circular 172,' U.S. Department of Agriculture, 1921.

For convenience a larger quantity of the bait is made—viz., 1 cwt. bran, 12 gallons water, 4 lb. Paris Green, 4 lb. treacle ; the water is added to the tub of bran and the treacle stirred in. The Paris Green is next emptied into the tub in four lots and stirred, after each addition, with a shovel. This is the quantity for 4 acres—*i.e.*, the formula per acre remains —viz., Paris Green, 1 lb. ; bran, 30 lb. ; treacle, 1 lb. ; water, 3 gallons.

In spreading the bait one may find it a little difficult to get 30 lb. bran to pan-out over a whole acre, and, therefore, some prefer to use 50 lb. bran.

The Leather-Jackets eat the bait and are poisoned. Paris Green is a dangerous arsenical poison, and there was natural hesitation in this broadcasting of it because of risk to other animals. It is, therefore, satisfactory to know that there is "no evidence of birds suffering from picking up poisoned bait or dead larvæ." [1]

On the Continent, Paris Green and bran has been found effective in the absence of rain. Further, in Continental experiments a solution of ammonium carbonate or liquid ammonia of 2 to 4 per cent strength brought the larvæ to the surface, where they died.

MOSQUITOES OR GNATS.

The numerous newspaper paragraphs during the summer and autumn headed "Death from Bite of an Insect" or "Death from Mosquito Bite" have occasioned questions as to what a mosquito is, and whether we have actual mosquitoes in Britain. The answer is that we have twenty-six different kinds of mosquitoes in Great Britain. Gnat is just another common name for a mosquito. The true Midges, on the other hand, belong to a separate family.

Midges, though insects of delicate build like mosquitoes, have no long proboscis. A feature of the mosquito or gnat is the length of the proboscis, which is several times longer than the head. Under magnification the head, legs, veins of the wings, and parts of the body in a mosquito are seen to be thickly covered with scales. We do not have these in midges, although some kinds of midges have hairy wings Of the fifty or so different kinds of midge in Britain, only two or three are blood-suckers. One of them, however—Ceratopogon—is a vicious blood-sucker; a pest in spring and summer evenings, biting through stockings and clothing. Well known and troublesome in the Highlands, it has been suggested as the cause and origin of the Highland Fling—

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[1] Bulletin No. 103, West of Scotland College.

"I find him in Tummel, I find him in Tayside,
I find him wherever the waters run free.
If I fish, if I walk, if I wilt by the wayside,
The Midge is with me.

He dogs me, he daunts me, he drives me demented,
Each season my face is increasing in size.
Though I fight him with everything fair and foul-scented
The chemist supplies."

The true Midges (Family Chironomidæ) do not carry disease, and in the species which suck blood it is only the females that are the blood-suckers.

Mosquitoes (Family Culicidæ) are blood-suckers in the case of the females, a meal of blood being necessary, or at least stimulating, for the production and laying of eggs. The male mosquito has less formidable mouth-parts, and nourishes himself on sap and the sweets of flowers. Certain mosquito species can act as the intermediate hosts and the carriers of the parasite which causes malaria—that dread disease which saps the vigour and virility of man in warm countries, which in past times has depopulated villages and devastated armies, and, along with her suicidal internal wars, played an important part in the passing of the "glory that was Greece," and to some extent also of the passing of "the grandeur that was Rome." To-day regions and places that were "the white man's grave" because of malaria are now health and holiday resorts, due to the annihilation measures practised against the mosquito, the chief of these measures being directed against the mosquito larvæ, which are aquatic in habit. An odd turn of the wheel of Science is the use of the malarial mosquito in dealing with G.P.I., or general paralysis of the insane. Mosquitoes harbouring the malarial organisms are allowed to bite patients suffering from the general paralysis, and malaria follows. The successful results in the experiments indicate that the malaria 'kills' the other disease, and then quinine is administered to cure the malaria. The exact rationale is not quite understood.

The malaria-carrying mosquitoes belong to the Genus Anopheles, and of these we have in Britain three species capable of carrying the disease—viz., *Anopheles maculipennis*, *A. bifurcatus* and *A. plumbeus*; the first is rare in Scotland in comparison with the other two.

In times past in England and Scotland, malaria or ague was well known—especially in fen or marshy districts—but owing to drainage (using this term in its widest sense), and very importantly to a greatly improved hygiene, malaria in Britain need not be any longer feared. Every now and again an indigenous case of malaria is reported among us. Such cases were commoner and gave rise to rather gloomy forebodings just after the Great War, when, owing to the return of soldiers from malarial fronts, our native Anopheles had a greater chance of becoming infected with the parasite of malaria. Active measures taken by the medical authorities, aided by entomological surveys and advice, reduced the incidence of malaria and removed the danger.

In Britain, then, we are not in fear of the disease, but the mosquito remains a nuisance as a blood-sucker. Only some seven out of the twenty-six British species are common enough to be troublesome, three of them being the Anopheles named above.

Mosquitoes have four stages in their life history—the adult winged stage, the egg, the larva, the pupa. The eggs are laid in the water, and the larva and the pupa spend their whole life in the water. *No water, no mosquitoes!* As an example of round of life we may take the common species (*Culex pipiens*) shown in Figs. 18 and 19, known as the Common Gnat or House Gnat. This is an abundant species, brownish or brownish-grey in colour. with pale bands on the abdomen. The male has bushy or plumose antennæ; the antennæ of the female are hairy and less handsome. The antennæ of insects are the chief organs of smell, but other senses may be resident in the antennæ—*e.g.*, touch and hearing. Well, the antennæ of the male *C. pipiens* function in hearing. Experimentally, certain notes given off by tuning forks were found to induce sympathetic vibrations in the antennæ of the male. The most marked vibrations occurred when the note sounded represented about 512 vibrations per second, this corresponding closely to the note upon which the female Culex hums. In this way the two sexes find one another, for the male, turning and arranging himself so that his two antennæ respond equally to the female hum, then flies forward to find his mate.

The fertilised female of the Common Gnat passes the winter in shelter in buildings, cellars, poultry-houses, and in May proceeds to lay her eggs in the water,—in ponds, stagnant water containing organic débris, cisterns, water-butts and sometimes in foul water. The female consigns her eggs to the water as a raft of 200 to 300 eggs glued together—a raft as buoyant or more so than any lifeboat. From the lower end of each egg a larva hatches into the water (Fig. 19). The larva has a head, a larger thorax and a 9-jointed abdomen. The head carries antennæ, eyes and mouth parts as well as tufts of hairs employed in sweeping and carrying to the mouth food particles collected in the water. This aquatic larva is legless, but at the hind end are plumes of hairs which aid in movement, and also four leaf-like appendages which are supplied with breathing tubes and may function as gills for breathing.

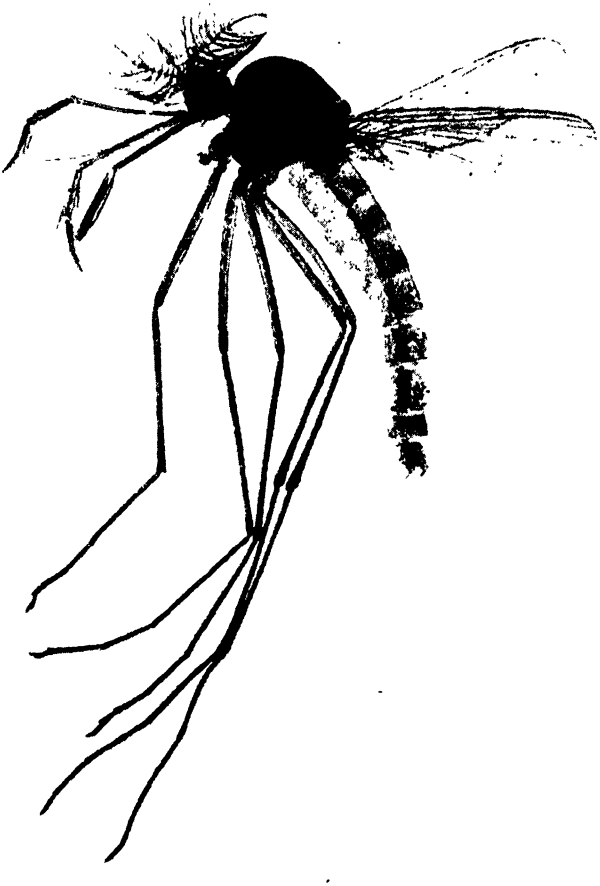

Fig. 18.—*The Common Gnat* (*male*).
Greatly magnified

From the upper surface of the second last joint there projects a tube-like respiratory siphon (Fig. 19); the two chief breathing tubes or tracheæ run along the body and are continued into this projecting tube, and pass along it to open at the apex in breathing-pores or spiracles which can be closed by valves or flaps at the tip. Rows of short spines fringe one side of the respiratory siphon, and there are two tufts of hairs at its base.

The larva hangs head downwards in the water, with the tip of the air tube or siphon at the surface, supported in this position by the pull or contractile force of the surface film on the pointed valves at the end of the air-tube. If disturbed the larva closes the respiratory openings by bringing the valves together, and sinks slowly to the bottom, or strikes down with a jerking movement. The larvæ are commonly known as wrigglers.

When full-fed the larva measures about half an inch. Pupation then takes place, the pupa being revealed after the last larval-moult. The pupa is comma-shaped and floats at the surface with the rounded head end upwards, the narrower abdomen curved downwards and inwards. Air is taken in for the developing fly by two trumpet-like horns that project from just behind the head. No food is taken in the pupal stage, but the pupa is capable of active movement, a jerking movement being aided by two paddle-like structures or swimming plates at the hind end of the body.

When the adult gnat is ready, a slit appears behind the head, on that part of the thorax showing above the surface of the water, and, laboriously, the gnat withdraws itself from pupal sheaths and pupal case. When the wings have dried and stretched, and the other parts hardened, the gnat takes flight to form one of that dancing crowd of males so often noticed, or perchance a female on the look-out for a mate. There are several generations in the season, but only females survive the winter.

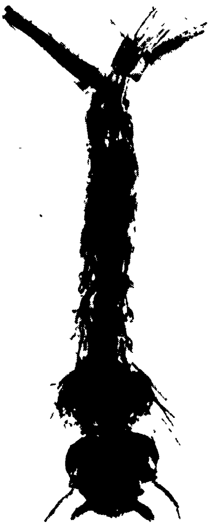

Fig. 19.—*The Larva of the Common Gnat hanging head downwards.*

Greatly magnified.

Anopheles has more or less a similar life-history. Differences between Culex and Anopheles may be tabulated thus—

Culex.	*Anopheles.*
Eggs up to 400.	*Eggs up to* 100.
Eggs laid in rafts.	Eggs with a wing or float and laid singly or in star-shaped clusters.
Larva has a conspicuous breathing-tube and hangs head downwards.	Larva lies horizontal or parallel to the surface of the water, and while the breathing pore is sent above the surface of the water there is no distinct tube or siphon.
The adult insect, when at rest, is more or less parallel to the surface on which it is resting, save that the thorax is arched or hump-like.	The adults stand, as Balfour says, on their heads—*i.e.*, the body is in a straight line at an angle with the surface.

Notes are added on the three species in Scotland that can convey malaria, and on two others that have been sent to me.

Anopheles maculipennis (the Spotted Winged Mosquito) is brown, with the wings dark-spotted. The females lay their eggs singly at the edges of weedy ponds, but not in foul water; sometimes the eggs are laid in brackish water. The female hibernates in buildings—*e.g.*, stables and cowsheds.

Eggs, larvæ, pupæ and males die before winter.

Anopheles bifurcatus.—Brown, but the wings clear. The adults live more in the open, not entering buildings so much; the females wound both men and cattle.

The winter is passed as a partly grown larva.

Anopheles plumbeus.—A smaller and darker species, with grey lines on the thorax. This is a species characteristic of wooded areas. The eggs are laid and the larvæ reared in holes in tree-trunks that contain water.. *A. plumbeus* gives a painful bite; it bites in the daytime as well as at night.

Ochlerotatus or *Aedes detritus*, a dark species with white scales on wings and abdomen, was recorded by my wife from Arrochar, where the larvæ were in large numbers in brackish pools that remained after high tides. Eggs are laid on land and retain their vitality for a long time, hatching when a tide chances to flood the place.

Edwards recorded the species from Arran. This species lives in the open, and bites freely towards evening.

Theobaldia annulata.—This is the largest mosquito in Britain. Like *A. maculipennis* it has spotted wings, but may be distinguished by the white rings on its legs. The eggs are laid in ditches where the water has a content of farm-yard manure, but they may be laid in purer water.

Hibernation is as adult, in buildings. It is a domestic species, common over Scotland and capable of being a nuisance indoors. I mentioned it in the 'Transactions' of 1925 as very *troublesome in a farm-house in Perthshire, members of the family being badly bitten in the night-time.*

The heat of a house wakens up the sleeping females early in the year. They were at their blood-sucking work in this case in late February and early March.[1]

THE MUSK RAT OR MUSQUASH (*Fiber zibethicus* or *Ondatra zibethica*) (Fig. 20).

During the past year or two questions have reached me from farmers, foresters, Rover Scouts, students of Nature and people interested in fur-bearing animals, as to the Musk Rat and whether there be risk or no in its introduction to England and Scotland for breeding, and whether the possible danger of the animal becoming a pest does not outweigh the possible advantage of a new fur-bearing industry. Here we offer a considered answer to the questions.

Man, directly and indirectly, in cultivation, in the domestication of animals and plants, in commerce and as pioneer and explorer, has been by far the most powerful agent in interfering with the Balance of Nature. It would not be difficult to prove how beneficial man's interference has often been, but our purpose, however, is rather to point out that *Homo sapiens* has not infrequently proved *Homo ineptus*, and, in view of past unfortunate mistakes, to ask whether the introduction of the Musk Rat to Britain is not likely to prove another mistake, even a misfortune.

Accidental and deliberate introductions to new countries of non-native plants and animals, that have proved calamitous, come to mind.

Our watercress choked New Zealand streams, as Canadian pond-weed—known unfairly and unkindly as Babington's Curse—blocked our streams and ponds and canals. The prickly pear, introduced from Central America to Australia as an interesting curiosity, has so multiplied in Australia as to spoil hundreds of thousands of acres of good agricultural land, turning it into almost impenetrable scrub. Our British blackberry, introduced to New Zealand, has become in its new country a primary weed pest. Everyone knows of the calamitous introduction of the rabbit to Australia; of the British sparrow to the United States; and of the mongoose to Jamaica, where, after doing its work of destroying the Jamaican rats, it turned its attention to native ground-nesting and other birds, the loss of which enabled insects and ticks to prove a plague. Again, the stoat, introduced to New Zealand as a rabbit destroyer, has proved a serious enemy to the scarce New Zealand apteryx or kiwi; while the introduction of pigs to Mauritius is blamed for the disappearance of the dodo.

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[1] *Literature.*—The ordinary reader should get 'British Mosquitoes and their Control.' Economic Series 4A, British Museum (Natural History), by F. W. Edwards and S. P. James.

The student will enjoy 'A Handbook of British Mosquitoes,' by Dr. W. Dickson Lang. British Museum (Natural History).

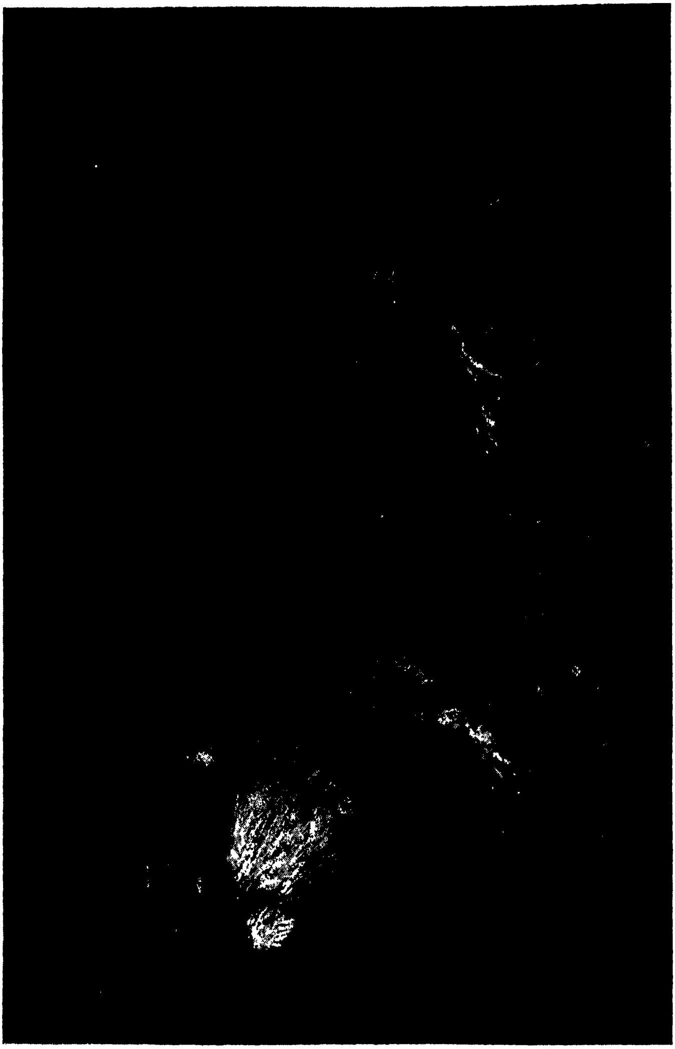

Fig. 20.—*The Musk Rat or Musquash.*

The specimen from which this figure was made measured 16½ inches.

In Britain recently we know the many complaints concerning the introduction of the little owl and of the grey squirrel.

In the light of these examples, what of the Musk Rat or Musquash?

The Musquash is a member of the Order of Rodents or gnawing mammals, an Order comprising rabbits, hares, beavers, rats, mice, voles, lemmings, and squirrels. In spite of its common name Musk Rat—so named because of the musk-like odour given off by the glands in the hind region—the Musquash is in relationship nearer the voles than the true rats. It looks, indeed, at first sight, like a gigantic water-vole. (Our so-called water-rat should rather be called water-vole.) The Musquash measures 20 or 21 inches in length, including a flat but somewhat thick, scaly tail of about 10 inches; the muzzle is blunt; the animal is hairy, long hairs hiding a soft under fur; the fur is brown or chestnut-brown above, but in certain varieties darker; the under-side is paler; the chin and throat are white. The weight of the animal varies from 1½ lb. to 2¼ lb., the females being the heavier.

The rudder-like tail marks the Musk Rat as aquatic in habit. Its real habitat is the banks of marshes, ponds, lochs and streams. The animal is never found far from water, and then only in search of new quarters. Active and at home as a diver and swimmer, the Musquash is slow on land. It does not actively take the offensive, but when cornered or impeded on land, by man or other animal, the Musquash courageously attacks, and may only be beaten off with difficulty and sacrifice of its life.

The native home of the Musk Rat is Canada and the United States, and in Canada especially the animal is greatly regarded and bred for its pelt or fur. I have friends who in parts of Ontario fence in stretches of marshland and pond, and encourage the Musk Rat for the sake of its pelt. There are great areas in Manitoba, for example, and also in Alaska, where there is elbow-room and to spare for the Musquash; but it is a different matter when one comes to compare their native haunts with the conditions that prevail in England and Scotland, where there is great risk of spread, with a multiplication that might easily become serious.

The Musquash in our country is likely to have at least two broods in a year, each litter with an average of five or six. The new-born young are blind, naked and helpless, and are suckled for about three weeks; the young grow rapidly and may migrate.

Residence of the Musk Rat.

The Musquash residence varies somewhat according to the nature of the ground and the season of the year. The simplest arrangement is an entrance hole below water-level, leading by a tunnel to a den or nest above the water-level; this den has a provision of grass, reeds and other vegetable matter, and from it there opens an air-hole, hidden by grass and sticks. Den and breeding place and storehouse are above water level. Somewhat more complex burrows may have a plunge-hole, by which the Musquash can escape by diving into deep water. Further, there can be houses or lodges made by bringing together reeds and grasses and mud; these lodges may be several feet in extent, and rise a foot or two above the level of the water; associated with these may be small, floating but moored rafts of reeds, and also jetties for leaving and approach.

It is admitted that the Musquash is valuable for its pelt. There are races with some variation in colour of the fur, and, at the moment, the darker-coloured variety is in favour. A pelt or skin varies in price from a few shillings to two dollars, and a lady's coat may be very expensive. Why, then, should one hesitate to give hearty approval to the efforts to build up a new fur-producing industry by establishing reservations or farms of Musquash in England and Scotland?

The food diet of the Musquash in its normal habitat is an innocent vegetarian diet—the roots of water plants, wild grasses, reeds and marsh plants. But there is grave risk in case of multiplication and spread of the animal, owing to accidental escape from the fenced-in reservations, of attack on valuable crop plants and a possible change in diet to an omnivorous one.

Further, the Musquash is a powerful burrower, and is capable of much damage by undermining river banks, the banks of lochs, roadways and railway embankments. In the West of England the undermining of the banks has resulted in diverting the course of a small stream.

The Musquash farms in our country are, of course, surrounded by wire netting of tested strength; ordinary wire-netting is easily gnawed through by the strong incisor or front teeth of the Musquash. In spite of the greatest care escapes have taken place, and specimens have been captured in the open, outside reservation places, in at least five Scottish and five or six English counties.

An Act—the Destructive Imported Animals Act—has just been passed. It gives power to prohibit or control the importation or keeping of Musk Rats. The Minister and Secretary of State have power to make regulations with respect to the ports at which Musk Rats may be imported under a licence, the nature of the container to be used for their transport from place to place, the manner in which Musk Rats may be kept, with the precautions to be taken against their escape.

Copies of the Act are obtainable at H.M. Stationery Office, 120 George Street, Edinburgh, or at Adastral House, Kingsway, London.

Active measures will be taken in a campaign to destroy the Musk Rats which have escaped from Musk Rat farms and are now spreading in the open. Annihilation is not an easy task, as the Musk Rat is nocturnal in habit and a burrower. The Musk Rat, too, has by this time got a certain start. Because of the habits of the Musk Rat, there is always the risk of the spread and increase in numbers remaining unnoticed for a time.

The experience of other European countries is an additional warning to us. Twenty-five years ago a sportsman set free in Bohemia a few Musk Rats brought from Alaska. The descendants of these now run into millions, and there have been migrations into other districts and neighbouring countries. Several European countries have forbidden all importation of the Musk Rat, and others are practising methods of trapping and destruction. Russia is almost alone in encouraging the Musquash industry, but in Russia the elbow-room and the nature of great parts of the country make the experiment not so risky as in other Continental countries.

AGRICULTURAL RESEARCH IN SCOTLAND IN 1931.

BEING A BRIEF SUMMARY OF WORK AT THE SCOTTISH AGRICULTURAL RESEARCH STATIONS DURING THE YEAR.

Readers desiring fuller information on any of the subjects mentioned should write to the Secretary of the Station at which the investigation is being carried out.

INSTITUTE OF ANIMAL GENETICS.

UNIVERSITY OF EDINBURGH, WEST MAINS ROAD.

Cattle.

As in the previous years the principal subject of investigation has been the conduct of an inquiry into the inheritance of milking capacity in dairy cattle. A new and more satisfactory method of data examination has been employed, and results appear to show that while transmission of the total yield of milk is to some extent dependent upon factors transmitted in a sex-linked manner, total yield of butter fat appears to depend solely on autosomal factors. The general problems of the inheritance of milk yield have been stated. *A priori* neither yield nor quality can be inherited in any simple manner; neither can the hereditary factors act principally in a dominant or recessive manner. It is therefore most important to ascertain whether or not the factors governing the inheritance of milking capacity are transmitted in a manner which does not conform to classical mendelism. The fact that inbreeding has been little employed in the construction of dairy breeds might be taken as an indication that certain of the factors governing the transmission of milking capacity are inherited in a peculiar manner. Up to the present time the investigations clearly show that this possibility cannot be ruled out.

This study is being continued, using the Dairy Shorthorn as material, work on which was begun in October 1930. The data have been provided by twenty of the leading Dairy Shorthorn breeders in England, and include not merely high-producing cows but every animal in the herd. In this respect the investigation is unique, and it is not anticipated that the results will confirm in every way results obtained by studies confined to high-yielding animals. No analysis of data has yet been made. Before this can be done yield has to be corrected for the cow's age, &c., pedigree must be looked out in the Herd Book and individuals must be classified according to their ancestry.

With the establishment of the Experimental Farm at Shothead, opportunity has been provided for the testing of the milk yield hypothesis in a practical manner. Three herds of cows are maintained. Dairy Shorthorns are being mated to a Beef Shorthorn bull of a strain which has given but little milk. Conversely, Beef Shorthorn cows are mated to a proven Dairy Shorthorn sire. The cross-bred bulls so obtained will be tested out upon the Ayrshire herd of cows. The extent to which they depress the yield of their daughters as compared to the yields of the cows to which they are mated should give some indication of the inheritance of milk yield.

Horses.

An interesting study of physiological problems relating to the reproductive cycle of the horse has been commenced. For this purpose a herd of Shetland ponies is maintained. At present effort is directed towards the discovery of an early and efficient means of diagnosis of pregnancy. It is believed that some means can be found, similar to the Zondek-Aschheim test, which is applicable to the human subject.

Other studies include an inquiry into the methods employed in the construction of the famous Clydesdale stud of the late Sir John Gilmour, Bart., of Montrave.

Sheep.

We are glad to have this opportunity of again acknowledging our gratitude to those sheep breeders throughout Scotland by whose aid much of the sheep work of the Institute has been made possible. Particularly helpful have they been in studies of a purely genetical nature involving an examination of the mode of inheritance of face colour in Blackface sheep, and the correlation of this with characters of economic importance. Data relating to over 2000 sheep have been collected. Concurrently with this work an attempt has been made to correlate varying proportions of black and white in the wool with hardiness and milk yield in the ewes. Evidence which has so far been gathered seems to indicate that such a correlation does exist.

A study of the inheritance of certain deformities is also under way. Fibrosis of muscle and jawlessness in lambs and absence of nipples in ewes have been studied. During the year small flocks of ewes have been collected and mated with rams. Each individual of these flocks has been selected on a basis of either exhibiting a particular deformity or else carrying the hereditary factor for it, this being determined by a study of its previous breeding history.

A study of the influence of the thyroid gland upon wool growth has been continued in co-operation with the Wool Industries Research Association, Leeds, where detailed physical examination of samples is carried out. Results so far obtained suggest that the thyroid is responsible for the maintenance of activity of the cells in the wool follicle before keratinisation occurs. There is also some indication that a deficiency of thyroxin results in a decrease of (1) fibre thickness, (2) density of number of fibres per unit area, and (3) breaking stress of the wool. Under the same condition elasticity and tensile strength seem to be increased, but growth in length is not affected.

Pigs.

With the removal of the pig work from West Mains Road to Shothead, the Pig Testing Station was closed down, and owing to the outbreak of disease the work was not recommenced when the new buildings at Shothead were completed. The Scottish Bacon Pig Competition, however, was continued, and as in previous years was conducted under the joint auspices of the Highland and Agricultural Society and this Institute.

It is feared that the severe reduction of the income of this Institute must result in a drastic curtailment of work in pigs. For the obvious reason that the establishment of an experiment is more expensive than its continuance we dare not sacrifice such long-range studies as that of milk inheritance. It follows that short-range studies must be jettisoned when income is reduced, and, therefore, work on pigs must be curtailed if not suspended.

Poultry.

For the past five years data has been accumulating which relate to certain problems directly affecting the poultry industry. As yet, however, no complete analysis of the figures has been made.

The fowls used are Brown Leghorns, and the original stock was obtained from a breeder in 1927. Since that date no females have been introduced, but yearly a well-bred male has been brought in. Matings have been carefully supervised, all eggs produced have been weighed and recorded and the resultant data will certainly throw light on problems relating to egg production and egg weight. From the figures collected it is hoped, also, to assess the relative importance of such widely differing factors as environment and breeding in relation to some problems of incubation—*e.g.*, dead in shell.

An analysis of the data relating to the possible effect of storage of eggs before incubation has already been made, and it has been found that eggs kept for seven to fourteen days before incubating give the same proportion of males as eggs kept up to seven days only. In the case of eggs kept longer than fourteen days a much higher proportion of males was produced from the hatch.

The tendency has been observed for hens to lay throughout a two-year period without the normal cessation for moult. With a view to determining whether or not this characteristic is inherited, controlled matings are being carried out.

In addition to these studies an analysis is being made of growth from hatching to maturity in both normal and experimental stock.

Rabbits.

It has often been alleged that the Rex rabbit inherits a liability to certain diseases. This allegation is now being scrutinised, and it is hoped that definite conclusions may be reached in the near future. In conjunction with this study the mode of inheritance of different types of coat fur found in the Rex is being examined, but this study is also in its initial stage only.

It appears that there are two types of Chinchilla, the dark being dominant to the light and the heterozygous form differing from the pure or homozygous. This is in agreement with conclusions reached by Castle, but so far it has not been possible to identify the Marder Chinchilla type recorded by Nachtsheim. The analysis of this series of characters is of considerable importance to rabbit breeders, for in their combination with the self or tan pattern character the sable varieties are produced. These are amongst the most popular and, therefore, most profitable varieties of fur-bearing rabbits. Their value, however, has been reduced by the fact that only a small proportion of the animals bred are of the desired lighter shade.

ANIMAL DISEASES RESEARCH ASSOCIATION.

MOREDUN INSTITUTE, GILMERTON, EDINBURGH.

Louping-Ill.

In the report for 1931 it was shown that the causal agent of Louping-Ill was a filtrable virus, and that the pathology of the disease was represented by a meningo-encephalo-myelitis (inflammation of the substance and coverings of the brain and spinal cord.) Further important advances in our knowledge of Louping-Ill have been made during the year.

It has been demonstrated that the virus can be transmitted by the tick, *Ixodes ricinus.* This constitutes the first known instance of the transmission of a neurotropic virus by a tick.

It has also been found that sheep artificially immunised to the virus are protected against Louping-Ill when grazed on infected pastures, but vaccines containing living virus have proved unsafe for large-scale immunisation. The results of tests of the value of vaccine containing killed virus have, however, been encouraging, and this product is receiving an extended trial during the present season.

Tick-Borne Fever.

During the course of the Louping-Ill research, a hitherto unsuspected disease was discovered to exist on Louping-Ill infected pastures. That this disease had not been previously recognised is due to the fact that, in common with Louping-Ill, it is tick-borne, and occurs during the season of maximal tick activity.

It can be distinguished from Louping-Ill on pathological, immunological and clinical evidence.

The disease appears to be of very real economic importance to sheep husbandry, and its cause and nature are under investigation.

Until this year, the rôle of the British tick, *Ixodes ricinus,* as a disease carrier was known only in Piraplasmosis (‘ Red water ’ in cattle.) Its incrimination in the transmission of such important diseases as Louping-Ill and Tick-Borne Fever emphasises the need for the effective control of this parasite.

Ecology of Ixodes ricinus.

With the object of eventually obtaining means by which *Ixodes ricinus* can be effectively controlled, the life history and ecology of the tick have been extensively studied.

Lamb Dysentery.

The specific value of Lamb Dysentery serum has now received wide recognition, and approximately 50,000 doses have been issued during the present season.

Braxy.

While the *Vibrion septique* is known to be invariably associated with Braxy, the inoculation of hoggs with vaccines prepared from this organism has been attended with irregular results. This year, efforts have been directed to obtaining a vaccine of high value, and controlled field experiments to test its efficacy have been carried through. The results of these have been very encouraging.

Scrapie.

The biochemical investigation of this disease, instituted in 1931, is being continued.

A comparative study of the conditions of occurrence of the disease in the border counties of Scotland and in France is in progress.

Enzootic Abortion in Ewes.

A first set of field experiments designed to test the possibility of the association of certain forms of Enzootic Abortion in ewes with mineral deficient diet is nearing completion.

Grass Sickness in Horses.

Last year a biochemical investigation of this disease was commenced. Examination of the blood from affected animals showed definite departure from the normal. How far these changes are specific for Grass Sickness is being made a subject of inquiry.

Milk Fever and Lambing Sickness.

The specific curative value of the 'Calcium Treatment' for these conditions is now accepted, and the treatment has become extensively adopted in veterinary practice throughout Europe and America.

Clinical observations indicate that the subcutaneous injection of suitable preparations of calcium to susceptible cows immediately after calving can effectively prevent Milk Fever.

'Pine' in Sheep and Calves.

An investigation of the disease known as 'Pine,' which exists in an acute form on the island of Tiree, has been carried out in collaboration with the Rowett Research Institute and the Macaulay Institute for Soil Research.

It has been found that the administration of a crude preparation of iron affords protection to animals grazed on 'thriftless' pastures, and is also capable of curing animals which are seriously affected.

It is hoped that this knowledge may have a wide application, since there is reason to believe that extensive areas in Scotland are affected by this disease.

ROWETT RESEARCH INSTITUTE.

BUCKSBURN, ABERDEEN.

Research on fundamental problems of nutrition is carried out in the Institute itself, and practical experimental work with groups of farm animals on the Duthie Stock Farm attached to the Institute.

ROWETT INSTITUTE.

Research is proceeding along three main lines of investigation : (1) the influence of nutrition on susceptibility to disease, (2) the nutritional significance of inorganic elements required only in traces and (3) factors affecting the absorption of food from the intestine.

Influence of Nutrition on Susceptibility to Disease.—It has frequently been observed that the incidence of disease is greater in animals on ill-balanced or deficient rations than in animals on rations which are adequate in all respects. This suggests that improved methods of feeding might reduce the losses among farm stock due to disease. Investigations on this subject have been running at the Institute for the past few years, and are likely to form the most important part of the work of the Institute for some considerable time in the future.

During the past year experimental results have been accumulating to show that certain deficiencies in the diet are reflected in abnormalities in the composition of the blood as determined by chemical analysis and also in the immunological reactions of the blood serum, which are regarded as being connected with the defence mechanisms of the body.

Sheep have been chosen as the main experimental animals in this investigation. An account of the part of the investigation which is of greatest practical interest is given in a review article in this issue of the ‘Transactions.’ It should be noted that this work is still in the experimental stage, and it would be premature to make recommendations based on these results for any drastic changes in the management of sheep with the object of reducing disease. The experiments must be run over a series of years before the practical value, if any, of the results being obtained can be demonstrated with certainty.

Inorganic Elements required in Traces.—There are a number of elements which, though present in very small amounts in food-stuffs and in the body, are now known to be essential to life. Considerable work has already been done on iodine, aluminium, copper and manganese. Further progress has been made in this particular field of research, and during 1931 the element fluorine has been subjected to special study. Fluorine is sometimes found in rock phosphates used for mineral supplements, and it is highly desirable to ascertain what amounts may be present without harmful effects, and the nature of the clinical symptoms produced by excessive amounts. Iodine work has in the meantime been suspended pending the outcome of a detailed inquiry to establish a reliable method of analysis for the minute quantities present in biological material.

Intestinal Absorption.—In this branch the conclusions arrived at during 1930 were confirmed, and further extensions in the work have been made. The conditions governing the absorption of glucose have been in part determined, the results being of special interest in affording further evidence of the relationship which exists between the concentration of calcium in the blood and the rate of passage of glucose through the walls of the intestine. Detailed studies were also made on the digestive system of the fowl, one point of practical interest being that the rate of absorption varies directly with the degree of fineness of the food.

DUTHIE EXPERIMENTAL FARM.

In the separate departments for dairy cows, beef cattle, sheep, pigs and poultry, work has been continued to establish optimum feeding standards for use in general farming practice in this country. In addition, data are being accumulated on rate of growth and cost of production under conditions of efficient feeding and management.

Experimental work on special aspects of feeding is also being conducted, some of the more interesting being as follows:—

Beef Cattle.—Home-bred calves were used in two trials, the first to determine the ultimate effect of reducing the milk allowance on the growth of pail-fed calves, and the second to study the economics of the cow as a foster mother to different numbers of suckled calves and to compare the costs and subsequent growth of these calves with those pail-fed.

Sheep.—The recording of normal production of Cheviot and Cross ewes was continued. Two hundred hoggs were fed in sheds, with satisfactory results. The mutton produced was of unusual excellence. A comparison of several methods of feeding showed that turnips were the best foundation for a healthy ration.

Pigs.—Separate tests have been carried out to determine the value respectively of cod-liver oil, oat-dust and bran in the fattening of pigs. In addition, a trial has been conducted to ascertain whether feeding sows on a wet or dry ration during pregnancy would affect the subsequent farrowing results, and a study has been made of the housing conditions best suited for farrowing.

Poultry.—Investigations have been made upon the rate of growth, egg production and economic return from chickens hatched at various dates. Early hatched chickens grew faster and laid earlier than those later hatched. In studies on the value of mineral supplements it has been found that, under ordinary conditions when the birds have a run on pasture, provided lime is supplied *ad libitum*, salt is the only mineral supplement required.

THE SCOTTISH PLANT BREEDING STATION.

CRAIGS HOUSE, CORSTORPHINE.

In the report this year it is proposed to give an outline of the progress that has been made at the Plant Breeding Station, Corstorphine, in the breeding of oats since the last report on this crop was made in the 'Transactions' in 1928.

One of the main objects of the breeding work with oats is to obtain improved varieties in which stiff straw, high grain yield, early maturity and adaptability are combined in as high a degree as possible. With this object in view many named varieties of oats have been crossed, and the hybrid material derived from the crosses has been carefully examined for outstanding plants possessing as many as possible of the desired qualities. Much importance is attached to the problem of creating and selecting highly productive plants having upstanding straw and a well-developed root system. In selecting individual plants due consideration is given to those possessing well-filled, thin-skinned grain.

The search for improved strains of oats amongst hybrid material has been encouraging, and among the promising hybrid selections the following crosses are represented :

Beseler's Prolific × Orion.
Castleton Potato × Beseler's Prolific.
Castleton Potato × Orion.
Potato × Record.
Sandy × Leader.

From Castleton Potato × Beseler's Prolific hybrids and Potato × Record hybrids, several short-strawed plants, which were of a type likely to withstand lodging and which possessed well-filled grain, were selected, and they are now being propagated to obtain seed for field trials. Among the Orion hybrids there are many early-ripening, attractive white-grain types, but in several of these the straw does not appear to be as resistant to lodging as may be desired in certain circumstances.

A number of hybrid selections from crosses obtained about twelve years ago have now been carefully tested for several years. One of the most outstanding of these was selected from a cross between Castleton Potato and Beseler's Prolific. This selection was noted for its relatively short straw and well-furnished panicles or 'heads.' It has been subjected to an extensive series of trials at the Plant Breeding Station, and at the Plant Registration Station, Department of Agriculture for Scotland, Corstorphine, and also at farms in many other localities. In November 1930 it was registered by the Department of Agriculture for Scotland under their Scheme for the Registration of Cereals, and it is now known as 'Elder.' The Certificate of Registration issued by the Department in respect of this variety states that the special qualities of this oat are :

1. " Its good tillering habit."
2. " Its special capacity to withstand lodging."
3. " Its well-furnished head of corn."
4. " Its good yield on fertile soils."
5. " Its attractive sample of grain."
6. " Its suitability as a lea oat."

In field trials in 1930 and 1931 at Boghall Experimental Farm, Midlothian, and at Craibstone Experimental Farm, Aberdeen, Elder was found to be highly resistant to lodging. In trials, yields of 30 cwt. of grain per acre have frequently been obtained, and in one instance a yield of about 40 cwt. was reported.

In some experiments at the Plant Breeding Station Elder has matured about the same time as the Swedish variety Victory, in others it has matured a few days later. It may be mentioned here that Elder is a variety which should not be allowed to become dead ripe before it is cut or some grain may be lost by 'shaking.'

Another hybrid variety which has given satisfactory results in various trials is one selected from a cross between Sandy and Leader. This new variety ripens earlier than Elder, the straw is longer and not so highly resistant to lodging. It was selected as a possible substitute for the Sandy variety which is still grown in some districts in the North and the West of Scotland. After a series of trials this variety was registered in January 1932 by the Department of Agriculture for Scotland under their Scheme for the Registration of Cereals, and it has been named 'Bell.' The Bell oat is described in the Certificate of Registration as :

> "An early variety having many of the characters of Sandy oat; of good tillering habit; very early in ear, maturing slowly: earlier in ripening than Sandy oat or Potato oat; having a moderately good yield of medium grain, faintly pink tinged: not liable to shed: having a large yield of good straw not so liable to lodge as Sandy: suitable for poorer soils and late districts."

Favourable reports of this variety have been obtained from trials in Orkney, Caithness and Dumfriesshire. In a trial in Caithness in 1929 it was reported that this variety compared very favourably with Potato, Sandy, Golden Rain and Plentiful, and that the yield of 20 cwt. per acre was considered very satisfactory in that district. In a trial in Orkney in 1930 it was reported that Bell was a most promising oat for that area in view of its marked earliness compared with white or red Sandy and its rather better resistance to lodging.

Several other promising hybrid varieties of oats are undergoing preliminary trials at the Plant Breeding Station and also at the Plant Registration Station, Corstorphine. Further efforts are being made to obtain stiff-strawed, productive strains which will ripen earlier than Elder. Some of the most outstanding early-ripening, stiff-strawed selections which have yet been obtained were selected from crosses between Potato and Record and between Castleton Potato and Yielder.

Members of the Society have had opportunities in 1931 and 1932 of obtaining seed of the Elder oat, and a considerable acreage of this oat will be grown in 1932. In 1932 all the available seed of the Bell oat—the produce of about four acres—was disposed of to members of the Society.

THE WEST OF SCOTLAND AGRICULTURAL COLLEGE.

(*a*) Milk Production Department.

This Department has now been installed in the new premises at Auchincruive, Ayr. The removal from Holmes Farm, Kilmarnock, caused some interruption of the work, but the change has been of great benefit, as much more work can now be undertaken than was possible in the old premises. A special feature of the accommodation provided is a byre specially designed for feeding trials. The main lines of investigation on hand may be reviewed briefly.

The Protein Supply.—It was mentioned in the 'Transactions' last year that it had been found that 20 per cent of digestible crude protein in the ration of milking cows led to higher milk production than did an allowance of 15 per cent, but that the relative economy of the two allowances depended largely on the price of feeding-stuffs. Now protein allowances of between 15 and 20 per cent and of over 20 per cent are being investigated.

Calf Rearing.—It has been found at this Institution that whole grains are better for calf rearing than are the ground products. In milk-selling districts it is sometimes difficult to get whole or even skim milk for calf feeding, so at the present time an attempt is being made to rear calves on a minimum of whole milk and to replace it with skim milk powder and whole grains. So far the indications are that the results may be satisfactory.

Pasteurised Milk.—A trial is being started in which pasteurised milk will be used for calf feeding. The plan is to give the calves unpasteurised colostrum for five days and then put them on to pasteurised milk. A control group is being fed on raw milk.

Proven Sires.—There is in course of preparation from the Reports of the Scottish Milk Records Association a list of bulls with ten or more high-producing daughters. The standard of production required for the daughters is 280 lb. butter fat in the lactation for a cow, and two-thirds of that amount for a heifer with her first calf. Though only a small part of the work has been completed, bulls with up to fifty high-producing daughters have been found.

(*b*) MILK UTILISATION DEPARTMENT.

Extending contact with the primary producers in dairying has been made during the past year, and numerous visits to farms where help was solicited have been made. Advice on such matters as flavour defects in market milk and in manufactured dairy products; failure of cream to churn in normal time; bacterial numbers, fat and solids-not-fat in milk samples; suspected presence of pathogenic organisms in milk; cracking of cheese during curing; various types of discolouration in cheese; taints in cheese; impurities in starter; strength of rennet and colouring matter; was given.

Cheese Taint.—The cheese taint which caused such devastating effects during the three preceding seasons did not recur during the past year. The cause of this defect and the sources of contamination were made clear to the dairy industry through the investigations of this Department. The necessity of using pure raw materials, of sterilising the cheesemaking utensils at the outset, and the destruction of infected accessory appliances like old cheese cloths, was stressed. Printed instructions regarding appropriate methods of disinfecting cheese-making equipment on farms which had previously experienced the taint were circulated in all the cheese-making districts in the College area, and help in carrying out the disinfecting process was afforded by members of the College staff. The use of pure culture starters was specially advocated. These measures were obviously not without effect.

Experimentally it was shown that organisms of the *B. acidophilus* type included in the starter could exercise a controlling effect on the emergence of the taint..

Bacteriological analyses of samples of commercial rennets collected from cheese-making farms in the south-west area were made with the object of determining whether the rennet might have a direct relationship to the emergence of the taint. By enrichment methods, it was found that many commercial rennet samples contained organisms of a putrefactive type, but experimental and practical proof that such organisms were responsible for the dreaded taint was not forthcoming.

Experimentally we have found that the development of the taint-producing organisms is accelerated by other bacteria of a non-putrefactive type. This association appears to be responsible for the rapid emergence of the taint in badly affected cheeses.

Starters.—The selection of appropriate strains of lactic acid bacteria for starter-making has been continued. For cheese-making it has been found that the association of the three main types of lactic acid bacteria in regulated proportions is of distinct advantage ; and that fresh new milk of normal reaction and of good hygienic quality maintains the activity of starters better when pasteurised to selected temperatures than when the same milk is sterilised in the autoclave. The experience of the past two seasons has shown that authenticated pure culture starters issued from the laboratory frequently lose their vigour in the hands of dairymen, owing chiefly to the restraining effect of the milk in which they are grown. The ability of certain strains to overcome such restraint has been demonstrated, and these are now being employed as the basis of our starters.

Butter Aroma.—Recent investigations on the continent have shown that starters which have a favourable influence on the flavour and more particularly on the aroma of butter are characterised by a definite production of acetyl-methyl-carbinol as well as lactic acid. This acetyl-methyl-carbinol forms by oxidation an aromatic compound, diacetyl, which is stated to be the factor responsible for the aroma of good butter. We have found that the addition of diacetyl to sweet cream before churning, and to sweet cream butter during the working process, imparts a distinct aroma to the newly made butter.

This aroma, however, is somewhat heavy, recalling that of bulked commercial butter. In margarine the addition of a diacetyl preparation was found to be of distinct advantage, the flavour as well as the aroma being improved when the regulated amount (0·0003 per cent) was employed, and when the diacetyl was added after the crystallisation process.

THE HANNAH DAIRY RESEARCH INSTITUTE.

KIRKHILL, AYR.

I. DEVELOPMENTS DURING THE YEAR.

The new laboratories and farm buildings were completed during the early part of 1931, and were formally opened in the presence of a large and distinguished gathering by the Rt. Hon. William Adamson, LL.D., M.P., Secretary of State for Scotland, on 25th April 1931. The staff of the Institute are therefore now provided with adequate accommodation and facilities for the development of their work.

II. RESEARCH IN PROGRESS.

Tuberculosis in Dairy Cows.

The experimental eradication scheme, described in previous reports, is making satisfactory progress. The number of free herds has shown an increase during the year, while much information is being accumulated with regard to such points as the incidence of infection in typical dairy herds, the sources from which new infection may be contracted, and the general difficulties which may be encountered in an eradication scheme run on voluntary lines.

In addition to this work the Institute is collaborating with the Department of Health for Scotland and with Local Health Authorities in an investigation of the relative infection of the milk supply of different localities throughout Scotland and of milk treated by different methods. The work includes the examination of a large number of raw milk samples, of bulked milk, of milk from tuberculin-tested herds, and of milk pasteurised by different processes. The results of the investigation, which is now drawing to a conclusion, should provide valuable information for the guidance of those who may be responsible for formulating any future policy with regard to the tuberculous infection of the milk supply.

Nutrition.

In the last report it was noted that a special metabolism house had been erected for the study of the digestive and metabolic processes in milking cows. During the year preliminary trials have been carried out, and these have resulted in the development of a satisfactory technique. In the meantime detailed analyses of the proteins of individual foodstuffs have been made and these will form a basis for future experiments on the utilisation of protein by dairy cows.

Milk Secretion.

For the past two years studies have been in progress with the object of determining the precursors of the milk constituents—*i.e.*, the form in which the digested food constituents are transported by the blood stream to the milk glands. The results of this work have not only indicated that previous workers in this field have neglected a number of important factors in the interpretation of their work, but have provided definite information as to the nature of certain of the precursors of the milk constituents. This work is now being extended to include a study of the actual processes of synthesis which take place in the milk glands.

Condensing and Drying of Milk.

In connection with the utilisation of surplus milk and milk residues, a report has been prepared and will shortly be issued which summarises existing knowledge on the bacterial and chemical aspects of condensing and drying, while a further report is in course of preparation in which the engineering aspects of the subject are dealt with. These are intended to form a basis for future investigations on a subject which is of growing importance to the dairy industry. In addition, original papers have been published summarising the results of investigations into the engineering aspects of the spray-drying of milk, and into the utilisation of milk and milk products in the baking industry.

THE MACAULAY INSTITUTE FOR SOIL RESEARCH.

CRAIGIEBUCKLER, ABERDEEN.

General Development of the Institute.—Progress has been made with the equipping of the central laboratories at Craigiebuckler, and a portion of the building is now being fully used. Completion of the adaptation of the building and full development of the work of the Institute have, however, been checked to a considerable extent by the present financial stringency. This is particularly true of the advisory work amongst farmers. Some of the tests for manurial requirements are expensive to carry out, and with the present funds and equipment only a limited amount of this very important branch of the Institute's work can be undertaken.

A wire cage for pot experimental work has been erected in the garden, the high wall of which affords the protection so essential for this work, and a beginning has been made with a pot test for manurial requirements which has given good results in Germany. A field has been laid out in experimental plots to study the effects of different forms of phosphate.

Improvement of the Poorer Classes of Land.—The importance of this branch of the Institute's work may be realised from the fact that less than one-sixth of the land surface of Scotland consists of arable land. It is often pointed out that when good land is going out of cultivation it is useless to try to improve poor land, but this point of view is due to a misapprehension of what is being aimed at. Most of the land in question is not suitable for arable farming, but the very poor —in some instances practically worthless—pasture is capable of improvement, and the possibilities of effecting such improvement on an economic basis are being studied. Experiments are being conducted on areas of common pasture in the island of Lewis, and already moderate dressings of shell sand and fertilisers have brought about marked improvements.

The importance of phosphatic manures has been clearly shown, and the application of basic slag alone has in certain cases proved very beneficial. It has been found that, although it is not essential to break the surface and re-seed, improvement is greater and more rapid if this is done. Experiments are being conducted with various implements with a view to finding the most satisfactory means of doing this at the lowest cost, and the results obtained through the use of a rotary spade harrow, which is used in Sweden, Finland and Germany, have been very promising.

Advisory Work amongst Farmers.—A considerable amount of advisory work has been carried out during the year, especially on questions of liming and manuring, and farmers are invited to take advantage of the facilities which are now offered in this connection. Advice may be obtained by direct application to the Macaulay Institute for Soil Research, Craigiebuckler, Aberdeen, or through the Agricultural Colleges.

Clover failure and oat sickness have also been studied, and, in conjunction with the Scottish Animal Diseases Research Association, problems connected with the malnutrition of mountain sheep, with special reference to possible iron deficiencies, are being investigated.

Study of Drainage Constituents of the Soil.—The study of the composition of soil drainage and the losses suffered by the soil through drainage has been continued. In 1931 the drain-gauges at Craibstone were under third-year grass, and the opportunity was taken of studying the effects of the modern system of intensive nitrogenous manuring of grassland. The particular aims were to ascertain the loss of nitrogen in the drainage water, and to observe the effect of the treatment on the other constituents of the drainage and on the crop.

One drain-gauge was as usual unmanured, whilst the other two received applications of phosphate and potash in November 1930, and dressings of sulphate of ammonia (amounting in all to 4 cwt. per acre) in March, May and September. The grass was cut at frequent intervals to give the effect of grazing by stock, the amount of clover was determined and analyses carried out. The composition of the drainage was investigated, and in spite of the heavy dressing of nitrogenous manure and the wet season, it was found that there was no increase in the loss of nitrogen, which in previous years was extremely small.

Soil Surveys.—Soil surveys form the basis of advisory work, for different soils have different properties and vary considerably in their response to lime and manures. It is important, therefore, to be able to differentiate the main soil types in the country, and to study their behaviour. A soil survey is as important to the farmer as is the geological survey to those interested in developing the country's mineral resources, and when this is fully realised there will be an insistent demand for soil maps from the agricultural community.

The Institute has made a beginning with this work in several areas, but the carrying out of the detailed surveys which are of most use to farmers is a slow and laborious process, and at the present rate of progress it will be many years before any appreciable area of the country can be surveyed.

In addition to the soil survey proper, field-to-field surveys of certain areas are being carried out, and at little expense any farmer can obtain a map showing the degrees of acidity of his various fields. This information can be supplemented by the advice on manurial and lime requirements already referred to.

Lewis Farm.—The acreage under crop at the Macaulay Demonstration Farm has been considerably increased, and a further area has been cultivated and prepared for cropping. The areas of virgin peat previously laid down to pasture have done well, and have provided excellent grazing for dairy cows. Experiments on the establishment of pasture at a low cost are being carried out, and various grasses, clovers and other forage crops are being tested on individual plots. Good crops of oats and silage were obtained, and in the garden a wide range of vegetables was grown successfully.

A Canadian type of wooden stave silo has been erected, and the dairy herd has been increased. The first public Demonstration was held in August 1931, and was attended by over 200 people from all parts of Lewis.

MILK RECORDS.

TWENTY-NINTH YEAR—RECORDS OF 30,576 COWS.

By WILLIAM STEVENSON, B.Sc., N.D.A., N.D.D., Superintendent,
The Scottish Milk Records Association.

SYSTEMATIC milk recording in Scotland was continued in 1931 under the direction of the Scottish Milk Records Association on the same lines as in 1930 and previous years. The scheme of private or unofficial milk records for unregistered herds inaugurated in 1924 was also continued during this year.

The Association in 1931 consisted of the following members :

Name and Address.	Body Represented.
Mr John Robson, Jun., Lynegar, Watten	Caithness Milk Recording Society.
Mr Thos. Barr, Hobsland, Monkton	Central and South Ayrshire Milk Recording Society (5 Circuits).
Mr William D. M'Cubbin, Lochlands, Maybole	
Mr William D. Wardrop, Rigg, Auchinleck	
Mr Andrew Wilson, Finlayston, Ochiltree	
Mr George Templeton, Carnell Farm, Hurlford	Central Ayrshire No. 2 Milk Recording Society.
Mr Alex. Y. Allan, Aitkenbar, Dumbarton	Dumbartonshire Milk Recording Society.
Mr John Johnstone, Millantae, Lockerbie	Dumfriesshire Milk Recording Society (3 Circuits).
Mr A. Kirkpatrick, Barr, Sanquhar	
Mr Mungo Sloan, Hunterhouse, Lochmaben	
Mr Robert Lohoar, Greenlees, Cambuslang	East Kilbride and District Milk Recording Society (2 Circuits).
Mr Alex. Paterson, Cathburn, Newmains	
Mr Hugh Andrew, Lennoxlove, Haddington	East Lothian and Border Milk Recording Society.
Mr Robt. M. Reid, The Glen Farm, Falkirk	East Stirlingshire Milk Recording Society.
Mr A. Dryburgh, Kirklandhill, Windygates	Fife Milk Recording Society (2 Circuits).
Mr William M'Adam, Athronhall, Milnathort	

Name and Address.	Body Represented.
Mr Alex. Munro of Leanach, Culloden Moor	Highland Milk Recording Society.
Mr D. M'Millan, Eorrabus, Bridgend.	Islay Milk Recording Society.
Mr Robert Young, Drum, Kilkenzie	Kintyre Milk Recording Society.
Mr John T. Kirkwood, B.Sc., N.D.A., Scorrieholm, Lesmahagow	Lesmahagow Milk Recording Society.
Mr Andrew C. M'Candlish, Ph.D., B.Sc., Claunch, Sorbie	Lower Wigtownshire Milk Recording Society.
Hon. G. Corbett, Rowallan, Kilmarnock	North Ayrshire (John Speir) Milk Recording Society (3 Circuits).
Mr Andrew Craig, Ryesholm, Dalry	
Mrs Eadie, Hazelbank, Dunlop	
Mr John A. Carlyle, B.Sc., Prudential Buildings, Arbroath	North of Scotland Milk Recording Society (2 Circuits).
Rt. Hon. Lord Carnegie, K.C.V.O., Elsick, Newtonhill	
Mr Robert Howie, Flatterton, Greenock	Renfrew and Bute Milk Recording Society (2 Circuits).
Mr John Telfer, Branchal, Bridge of Weir	
Mr James Whiteford, Caldcoats, Newton Mearns	Renfrewshire (Upper Ward) Milk Recording Society.
Mr Andrew Cochran, High Ardwell, Kirkcolm	Rhins of Galloway Milk Recording Society (5 Circuits).
Mr John Forster, Mains of Larg, New Luce	
Mr Alex. M. M'Caig, Challoch, Stranraer	
Mr James Wither, Awhirk, Stoneykirk	
Mr H. G. Baird, Kirkchrist, Kirkcudbright	Stewartry of Kirkcudbright Milk Recording Society (5 Circuits).
Mr George Barbour, Auchengibbert, Crocketford	
Mr T. Graham Clement, Howwell, Kirkcudbright	
Mr William P. Gilmour, Balmangan, Borgue	
Mr Hugh Hastings, Powillimount, Kirkbean	
Mr Eben More, Dalmacoulter, Airdrie	West Lothian Milk Recording Society.
Col. W. T. R. Houldsworth, Kirkbride, Maybole	The Ayrshire Cattle Herd-Book Society of Great Britain and Ireland.
Mr James Howie, Muirside, Hollywood	
Mr John R. Miller, Midkelton, Castle Douglas	
Mr A. W. Montgomerie, Westburn, Cambuslang	
Mr James Kilpatrick, Craigie Mains, Kilmarnock	The British Friesian Cattle Society.
Mr John Telfer, Branchal, Kilmacolm	
Mr W. P. Gilmour, Balmangan, Kirkcudbright	The Highland and Agricultural Society of Scotland.
Mr Alex. Munro of Leanach, Culloden Moor	
Mr Alex. Murdoch, East Hallside, Hallside	
Mr James Dunlop, Midland, Prestwick	The West of Scotland Agricultural College.
Principal W. G. R. Paterson, 6 Blythswood Square, Glasgow	

Name and Address.	Body Represented.
Mr Alexander Lauder, D.Sc., 13 George Square, Edinburgh	The Edinburgh and East of Scotland College of Agriculture.
Mr Thomas Young, N.D.A., 13 George Square, Edinburgh	
Mr G. G. Esslemont, M.B.E., B.Sc., 41½ Union Street, Aberdeen	The North of Scotland College of Agriculture.
Professor J. Hendrick, Marischal College, Aberdeen	
Mr J. F. Tocher, D.Sc., 41½ Union Street, Aberdeen	
Mr Robert Dickie, Knockenjig, Sanquhar	Co-opted Members.
Mr James Dunlop, Midland, Prestwick	
Mr Robert Laird, Lawthorn, Irvine	
Mr George W. Lambie, Pilmuir, Newton Mearns	
Sir Hugh Shaw Stewart, Bart., C.B. Ardgowan, Inverkip	

Chairman—Mr James Howie.

The following were the principal members of the staff :—

Secretary and Treasurer—Mr John Howie.

Superintendent—Mr William Stevenson, B.Sc., N.D.A., N.D.D.

Assistant Superintendent—Mr Percy H. Hart.

SCHEME OF OFFICIAL MILK RECORDS.

ADMINISTRATION.

In 1931, as in previous years, the scheme of official milk records was administered by the Association through local Milk Recording Societies. The grant from the Treasury, obtained through the Department of Agriculture for Scotland, was continued in 1931 on the same conditions as in the previous year, though the amount authorised was reduced to £2449, compared with £2610 for 1930, £2650 for 1929, £3000 for 1928 and £3350 for 1927. Owing to the reduction in the Treasury grant the Association were unable to give grants to local societies for new members.

Grants were allocated to local societies on the following scale :—

1. Societies testing at intervals of not more than twenty-one days :—

(*a*) The hire of the necessary milk-testing appliances free of annual charge, the society to upkeep the apparatus in good condition.
(*b*) An annual grant of 9s. 6d. per member towards the cost of surprise check tests.

2. Societies testing at intervals of from twenty-two to twenty-eight days :—

(*a*) The hire of the necessary milk-testing appliances free of annual charge, the society to upkeep the apparatus in good condition.
(*b*) An annual grant of 8s. per member towards the cost of surprise check tests.

During the latter part of 1930 and the earlier months of the year every effort was made to obtain additional applications for membership of local societies in 1931 throughout the various dairying districts of Scotland, and 62 definite applications were received. But for various reasons, such as the continued acute depression in the industry, and members disposing of their dairy herds, or changing their farms, abortion in herds, &c., there were more than the usual number of resignations.

All the local milk recording societies which operated in 1930 continued in 1931 ; though the Lower Wigtownshire Society, with a view to economy in working, decided to extend the intervals between tests, and have only one large circuit instead of two smaller circuits as formerly.

The number of recorders' circuits in 1931 was 41 ; the number of herds officially tested, 724 ; and the total number of cows officially tested, 30,576, compared with 30,720 in 1930. The position in 1931 was considered satisfactory under the conditions prevailing in the industry, when the majority of agricultural societies or associations were unable to maintain their former membership.

The following is a list of the Milk Recording Societies which operated in 1931, with the name and address of the Secretary of each society :—

Name of the Society.	Secretary.
Caithness	Mr John Robson, Jun., Lynegar, Watten.
Central and South Ayrshire (5 Circuits)	Mr E. A. Bell, M.A., B.Sc., 13 Alloway Street, Ayr.
Central Ayrshire No. 2 .	Mr James Caldwell, Moorfield, Kilmarnock.
Dumbartonshire . . .	Mr John Bilsland, Quay Place, Dumbarton.
Dumfriesshire (3 Circuits)	Mr Thomas Henderson, Solicitor, Lockerbie.
East Kilbride and District (2 Circuits)	Mr Arthur Gilmour, C.A., 23 Silvergrove Street, Glasgow.
East Lothian and Border	Mr James L. Nisbet, Easter Newton, Kirknewton.
East Stirlingshire . . .	Mr Robert M. Reid, The Glen Farm, Falkirk.
Fife (2 Circuits) . . .	Mr William Macniven, The Nook, Southerton Road, Kirkcaldy.
Highland	Mr J. M. Hunter, Queensgate, Inverness.
Islay	Mr D. M'Millan, Eorrabus, Bridgend.
Kintyre	Mr Robert Young, Drum, Kilkenzie.
Lesmahagow	Mr Gavin Hamilton, British Linen Bank, Lesmahagow.
Lower Wigtownshire .	Mr William Christison, Barglass, Kirkinner.
North Ayrshire (John Speir) (3 Circuits)	Mr John W. Goudie, Union Bank, Kilmarnock.
North of Scotland (2 Circuits)	Mr James W. Mathewson, 218 Hilton Drive, Aberdeen.
Renfrew and Bute (2 Circuits)	Mr Thomas Hunter, Solicitor, 24 High Street, Paisley.
Renfrewshire (Upper Ward)	Mr William Henderson, Old Crookston, Nitshill.
Rhins of Galloway (5 Circuits)	Mr W. Brown Moir, 8 Bridge Street, Stranraer.
Stewartry of Kirkcudbright (5 Circuits)	Mr Patrick Gifford, Solicitor, Castle Douglas.
West Lothian	Mr James Ogilvie, Dalmacoulter, Airdrie.

SEASON 1931.

The table on the following page shows for each society or circuit the number of herds, the number of cows tested, the average interval between the tests and the duration of the recording season :—

[TABLE

Name of the Society or Circuit.	No. of Herds.	No. of Cows Tested.	Average interval between Tests, in Days.	Duration of Recording Season, in Weeks.
1. Caithness	1	11	21	52
Central and South Ayrshire—				
2. Ayr and Coylton	19	675	22	52
3. Cumnock and District	18	503	21	52
4. Girvan and Maybole	19	771	21	52
5. Kilmarnock and Monkton	17	667	21	52
6. Mauchline and Drongan	18	593	22	52
7. Central Ayrshire No. 2	18	643	23	52
8. Dumbartonshire	18	588	23	52
Dumfriesshire—				
9. Mid Annandale	21	784	28	52
10. Upper Annandale	22	953	28	52
11. Upper Nithsdale	22	983	28	52
East Kilbride and District—				
12. East Kilbride and District	17	634	24	52
13. Hamilton and District	18	570	24	52
14. East Lothian and Border	23	1017	28	52
15. East Stirlingshire	20	650	26	52
Fife—				
16. Dunfermline and Kirkcaldy	20	606	26	52
17. Cupar-Fife and Perth	17	535	22	52
18. Highland	18	587	26	52
19. Islay	6	150	21	41
20. Kintyre	16	745	21	52
21. Lesmahagow	20	605	26	52
22. Lower Wigtownshire	20	1063	28	52
North Ayrshire (John Speir)—				
23. Fenwick	8	269	26	52
24. 'John Spier'	22	662	28	52
25. Stewarton and Montgomerie	26	1012	28	52
North of Scotland—				
26. Forfarshire and Kincardineshire	20	617	28	52
27. Aberdeen and District	22	893	28	52
Renfrew and Bute—				
28. Bute and Inverkip	23	643	28	52
29. Paisley and Kilmacolm	16	542	21	52
30. Renfrewshire (Upper Ward)	12	516	26	52
Rhins of Galloway—				
31. Kirkcolm and District	17	1115	22	52
32. Kirkmaiden and District	13	1151	25	52
33. Leswalt	16	1097	23	52
34. Luce Valley	15	962	22	52
35. Stranraer and District	13	977	22	52
Stewartry of Kirkcudbright—				
36. Dalbeattie and New Abbey	18	758	23	52
37. Castle Douglas & New Galloway	20	1098	23	52
38. Castle Douglas and District	20	1029	26	52
39. Kirkcudbright and District	20	1189	25	52
40. Borgue, Twynholm & Gatehouse	19	1001	25	52
41. West Lothian	16	712	22	52
Total No.	724	30,576	...	...

DEFINITIONS.

The milk records compiled by the Association are records of the estimated quantity of milk produced by each cow in a separate lactation, and of the estimated percentage of milk fat contained in the milk. For convenience a gallon of milk was reckoned as 10 lb. A gallon of milk of average quality weighs almost exactly 10¼ lb. The following further particulars concerning each record were also given wherever possible:—

Name of cow, byre number and herd-book number.
Sire of cow, and herd-book number of sire.
Dam of cow, and herd-book number of dam.
Date of birth.
Date of calving preceding opening of record.
Number of weeks in milk.
Date of next calving after record closed.

The following particulars of the preceding record were appended to each record, where available :—

Date of calving preceding opening of record.
Quantity of milk in gallons.
Percentage of fat in milk.
Number of weeks in milk.

The milk yields were estimated in respect of quantity and milk-fat percentage from the results of systematic periodic tests by trained recorders approved by the Association. The recorders visited the farms for this purpose at intervals varying from twenty-one to twenty-eight days, and each day of visit was regarded as the middle day of the period covered by the visit. Milk records estimated in this way approximate closely to the actual milk yields.

METHOD OF RECORDING ADOPTED—OFFICIAL RECORDS.

A distinctive feature of milk recording in Scotland in 1931, as in former years, was that the official records were entirely the work of trained official recorders. Recorders had previously to undergo a special course of training in milk recording at the Dairy School for Scotland, or other approved College of Agriculture. Only candidates of good character and good general education were selected to attend these courses ; and all recorders, before appointment, were approved by the Executive Committee of the Association.

Fuller details of the method of recording adopted will be found in the Association's annual report. The byre sheets were written out in duplicate. The principal copies were posted at regular intervals to the office of the Association, and the second copies left with the respective members. The recorder transferred the results from the extended byre sheet to the milk record book for the herd indelibly in ink, each cow being assigned a separate page, at the top of which full particulars of the cow were entered, including the indelible tattoo marks on the animal.

The byre sheets were carefully revised and corrected in the Association's office during the season, and a list of the necessary corrections sent to each recorder periodically to be entered in the record books.

Visits of inspection were made to each recorder and to the members of local societies at the different farms periodically throughout the year by members of the Association's staff, and reports thereon submitted to the Executive Committee. The Executive Committee reserved the right to withdraw approval of any recorder at any time, or to limit the period of service of any recorder with any particular society. Members of local societies refusing to observe any of the rules of the Association, or deemed to be guilty of conduct injurious to the true interests of milk recording, were liable to be temporarily or permanently suspended.

Another distinctive feature was the surprise check tests, the records of each herd being checked in this way about two or three times throughout the year. The recorder was instructed, by a letter from the superintendent on a date unknown to recorder and owner of herd, to remain at the same farm another day and make another complete twenty-four hours' test. The surprise test results were entered on special buff-coloured byre sheets, and in the record books in red ink immediately below the results of the regular test of the previous day. The buff byre sheets were posted to the Association's office with the other sheets, and any abnormal differences were immediately noted and were reported to the Executive Committee.

As a result of this system of surprise check tests, each page of the 1931 milk record books contains two or three lines of entries in red, comparison of which with the immediately preceding entries provides valuable evidence as to the genuineness of the milk records.

In addition to the surprise check tests made by the recorder, a number of independent surprise tests were made by the Association's staff, in order to check the recorder's work.

All records were closed at the end of December, the current lactations being carried forward to the new books of the following year. Finally, summary sheets were written out in duplicate showing the total milk yields for each cow for the lactation or part lactation, with full particulars of the cow, dates of calving, &c. The principal copy of the summary sheet was posted to the Association's office with the record book, and the second copy left with the owner of the herd.

All record books and summary sheets were carefully revised, corrected in detail and initialled in the Association's office during the next few months, the record books being returned later to the respective members, and the summary sheets retained and bound for future reference.

The milk records were next classified into three groups for cows and heifers respectively, on the following basis. Experience has confirmed the view that a very useful comparison is obtained by reckoning the yields at their estimated equivalent of milk of 1 per cent fat. Such a comparison takes into consideration both the quantity and the quality of the milk.

Cows with a milk record equivalent to not less than 2500 gallons at 1 per cent fat, and heifers with a milk record equivalent to not less than 2000 gallons at 1 per cent fat, were grouped into Class I. Cows and heifers with milk records of less than two-thirds of these amounts—viz., 1660 and 1330 gallons respectively—were grouped into Class III.

The following short table shows the corresponding values of these yields in fairly good milk of 3·5 per cent milk fat :—

Class.	Yield in Milk of 1 per cent Fat. (Gallons.)	Corresponding Yield in Milk of 3·5 per cent Fat. (Gallons.)
Cows in Class I. . .	Not less than 2500 .	714
Heifers in Class I. .	Not less than 2000 .	571
Cows in Class III. .	Less than 1660 . .	474
Heifers in Class III. .	Less than 1330 . .	380

All cows and heifers with milk yields falling between these limits would come into Class II. Such animals naturally claim less attention than the good milkers or the obviously unprofitable animals. It should be noted, however, that Class II. would include a certain number of unclassified yields, as there were a number of cases where, from various causes, the results of a whole normal lactation could not be obtained.

The Association will shortly publish an Annual Report giving fuller details of the work of the Association and of each local Milk Recording Society during 1931. This report will include tables showing for each farm the number of cows and heifers tested and the number and percentage included in Classes I. and III. respectively. Each herd is included under the respective local society, but is represented only by an alphabetical letter, the owner being advised privately of the identity in the report of his own herd or herds. From these tables any member may see at a glance how his herd compares with other herds in the same or any other district, and the improvement in his own herd compared with previous years. The report will also show in tabular form the percentage of Class I. and Class III. animals of all animals tested under the Association's scheme during the year, and will thus afford a valuable indication of the progress in milk production generally.

An important feature of the Association's annual reports, from 1917 inclusive, is the register of good milking cows with the names and addresses of owners and full particulars of the milk records. This register includes only the records of animals with a milk yield equivalent to not less than 2800 gallons containing 1 per cent of milk fat in the case of a cow, and 2240 gallons containing 1 per cent of milk fat in the case of a heifer, and is further restricted to animals which completed their lactations before the end of the year and gave birth to another calf within not more than fifteen months of date of previous calving. Full particulars of each record are given, and all lists of records are submitted to the owners of the respective animals for revision before publication. The register is of great value to all interested in increased milk production and in the breeding and rearing of animals of the best milking strains, and is invaluable for reference.

It should always be kept in mind when making a comparison of cows in different herds or in different districts that the different methods of dairying practised have a considerable influence on the milk yields, and that therefore milk yields alone do not necessarily indicate the true relative inherent or hereditary milking qualities of the animal. But the authenticated milk records compiled by the Association are of inestimable value to breeders and owners of dairy cows if properly interpreted.

REVIEW OF 1931—OFFICIAL RECORDS.

Recording was carried on in 1931 by 41 local societies or circuits, comprising 724 members. The number of cows tested in 1931 was 30,576, compared with 30,898 in 1929, which was the largest number officially tested in the history of the Association.

The percentage of dairy cows officially recorded in Scotland compares very favourably with that of other countries. With the exception of Denmark, where milk recording was introduced earlier than in Scotland and conditions prevail more favourable to movements organised on a co-operative basis, Scotland contains a higher proportion of officially recorded dairy cows than any other country.

During the year 6 recorders, for various reasons, terminated their engagements. The Executive Committee, however, in the same period approved of 14 applicants for the position of milk recorder, and were able to recommend a sufficient number of qualified recorders. Nine women recorders were employed in 1931, and 36 men recorders. In this connection the Committee are indebted to the West of Scotland Agricultural College for giving special courses of instruction for milk recorders to meet the Association's requirements. Only one special course was required in 1931—namely, in December. Twenty-one selected candidates attended the course, and 14 obtained the certificate.

The Executive Committee purchased the supplies of milk-testing apparatus, sulphuric acid and amylic alcohol for local societies, as in previous years.

The system of surprise check tests, introduced in 1920, was continued in 1931. The total number of check tests made by recorders during the season was 985. In no instance in 1931 was the average milk yield for the herd more than 3 lb. milk daily less on the occasion of a check test, as compared with the previous day. Only 1 herd showed an average of over 2 lb. less. In addition to the surprise tests arranged for and carried out by the recorders, the Assistant Superintendent made 40 special check tests of different herds. The results in most instances agreed very closely in regard both to average milk yields and fat percentages with those of the recorders' previous tests. Only 3 herds showed an average daily yield of over 2 lb. less on the occasion of a special check test, and only 1 herd had an average of over 2 lb. more. With regard to average fat percentages, 4 herds showed an average fat percentage of over ·2 per cent lower, and only 1 herd an average of over ·2 per cent higher. With the exception of 5 herds, the average fat percentages were all within ·2 of those obtained by the recorders at the previous tests.

With regard to the general conditions for milk production during 1931, the weather showed considerable variation. March was one of the driest months of that name on record. Cold dry conditions prevailed during April and the first three weeks of May. During this period growth was retarded by low temperatures. The following twelve weeks, extending from the last week of May to the third week of August, were distinguished by the exceptionally unsettled and wet conditions that prevailed in practically all districts. During these weeks the temperature was generally below the normal, and there was a marked deficiency of moisture. As a result of these unfavourable conditions crops made slow progress. In contrast to the weather of the summer months, that prevailing during September and October was dry and mild. During November mild wet weather was general, and root crops and grass continued to grow throughout the month. The hay crop was well above the average of the last ten years, though in the earlier districts a considerable proportion was damaged in harvesting owing to the adverse weather conditions ; in later districts much of the crop was cut under more satisfactory conditions, and the hay was consequently of better quality. The wet cold weather during the summer retarded the growth of the root crops, and weeds became prevalent in most districts ; fair progress was made by root crops during the dry genial weather in September and October, but not sufficient to compensate for the slow growth earlier in the season. Pastures were checked by cold weather during the spring months but made good progress towards the end of May and grew luxuriantly during June, July and August, though the quality of the herbage deteriorated in consequence of the wet weather. Dairy cows did well throughout the season and the milk yield was well maintained, though in some districts mastitis caused a considerable amount of trouble. But prices generally for milk and milk products relative to costs of production were no better than in the immediately preceding years, which were far from satisfactory in this respect, in the case of the latter due to highly organised foreign competition and of the former largely to opposing interests creating difficulties in marketing. Economic conditions did not encourage owners to produce the best possible milk yields from their herds. From the financial point of view the year was probably the worst of the series of eleven poor years in succession.

In the case of recorded herds, other conditions militated against a higher average yield. As in recent years, a considerable proportion of herds which had been recorded for a period of years were entirely dispersed, or for other reasons already referred to did not continue to be recorded, while a considerable number of 'new herds,' or herds tested for not more than three years, were included. The proportion of regular milk record herds was thereby correspondingly reduced.

The following table shows for each society or circuit the number and percentage of cows and heifers of each class in 1931, with a comparison of the average results from 1914 to 1931 inclusive :—

Society or Circuit.	Cows and Heifers.				
	Number.			Per Cent.	
	Total.	Class I.	Class III.	Class I.	Class III.
1. Caithness	11	7	...	64	...
Central and South Ayrshire—					
2. Ayr and Coylton	675	517	...	86	...*
3. Cumnock and District	503	435	2	86	...
4. Girvan and Maybole	771	596	12	83	2*
5. Kilmarnock and Monkton	667	455	7	76	1*
6. Mauchline and Drongan	593	486	10	82	2
7. Central Ayrshire No. 2	643	541	1	84	...
8. Dumbartonshire	588	475	1	81	...
Dumfriesshire—					
9. Mid Annandale	784	580	5	78	1*
10. Upper Annandale	953	674	13	71	1*
11. Upper Nithsdale	983	718	13	74	1*
East Kilbride and District—					
12. East Kilbride and District	634	429	10	68	2
13. Hamilton and District	570	444	7	78	1
14. East Lothian and Border	1017	696	10	73	1*
15. East Stirlingshire	650	472	4	73	1
Fife—					
16. Dunfermline and Kirkcaldy	606	500	2	83	...*
17. Cupar-Fife and Perth	535	381	12	72	2*
18. Highland	587	423	11	72	2
19. Islay	150	56	1	37	1
20. Kintyre	745	555	10	74	1
21. Lesmahagow	605	489	3	81	...
22. Lower Wigtownshire	1063	622	27	63	3*
North Ayrshire (John Speir)—					
23. Fenwick	269	210	2	78	1
24. 'John Speir'	662	440	12	68	2*
25. Stewarton and Montgomerie	1012	713	3	79	...*
North of Scotland—					
26. Forfarshire and Kincardineshire	617	501	3	83	...*
27. Aberdeen and District	893	579	34	65	4
Renfrew and Bute—					
28. Bute and Inverkip	643	454	14	71	2
29. Paisley and Kilmacolm	542	381	2	74	...*
30. Renfrewshire (Upper Ward)	516	438	2	85	...
Rhins of Galloway—					
31. Kirkcolm and District	1115	746	25	70	2*
32. Kirkmaiden and District	1151	693	28	61	2
33. Leswalt	1097	666	18	61	2
34. Luce Valley	962	586	26	61	3
35. Stranraer and District	977	648	25	70	3*
Stewartry of Kirkcudbright—					
36. Dalbeattie and New Abbey	758	499	17	71	2*
37. Castle Douglas and New Galloway	1098	762	14	73	1*

Society or Circuit.	Cows and Heifers.				
	Number.			Per Cent.	
	Total.	Class I.	Class III.	Class I.	Class III.
38. Castle Douglas and District	1029	583	24	59	2*
39. Kirkcudbright and District	1189	831	14	73	1*
40. Borgue, Twynholm and Gatehouse . . .	1001	648	37	65	4
41. West Lothian . . .	712	516	17	74	2*
Of all the cows and heifers tested in 1931	30,576	21,445	478	72¼	1½
Comparison with 1930 .	30,720	20,905	371	70	1¼
Comparison with 1929 .	30,898			68	1¾
Comparison with 1928 .	30,293			66	2½
Comparison with 1927 .	29,459			65¾	2¾
Comparison with 1926 .	29,236			65½	2¾
Comparison with 1925 .	28,410			60	5
Comparison with 1924 .	27,957			65	3
Comparison with 1923 .	26,952			65	2
Comparison with 1922 .	27,275			63	2
Comparison with 1921 .	26,752			58¾	4
Comparison with 1920 .	24,191			55¼	3¼
Comparison with 1919 .	20,786			49½	4½
Comparison with 1918 .	17,827			49	5½
Comparison with 1917 .	19,564			50	4¾
Comparison with 1916 .	22,702			53¼	4¾
Comparison with 1915 .	26,572			46	6
Comparison with 1914 .	26,424			39½	9

* Excluding herds tested during only a part of the recording season—899 cows in all.

Reviewing the results of the 41 circuits as a whole, we find that of the total of 30,576 cows and heifers tested in 1931, excluding 899 animals in herds tested during only a part of the season, and therefore not classified, 21,445 were included in Class I. and only 478 in Class III. This is equivalent to 72¼ per cent in Class I. and 1½ per cent in Class III. Thus, 72¼ per cent of all the cows and heifers tested gave a milk yield equivalent to not less than 714 gallons containing 3·5 per cent milk fat in the case of a cow, and 571 gallons in the case of a heifer; while only 1½ per cent gave a milk yield equivalent to less than 474 gallons containing 3·5 per cent milk fat in the case of a cow, and 380 gallons in the case of a heifer. In 1930, 70 per cent were eligible for Class I., and 1¼ per cent were included in Class III.

The average standard attained in 1931 was undoubtedly lowered by the inclusion of the considerable proportion of 'new' herds, and by the adverse trading conditions already referred to, yet it will be observed from the preceding table that the proportion of animals qualifying for inclusion in Class I. in 1931 is the highest reached since the commencement of official milk recording twenty-nine years ago.

It will be observed also that the proportion of good milking or Class I. cows and heifers to the total animals tested has increased from 39½ per cent in 1914 (when the present basis of classification was adopted) to 72¼ per cent in 1931; while the proportion of Class III., or obviously unprofitable, animals has been reduced in the same period from 9 per cent to 1½ per cent. These figures indicate a large increase in herd average milk yields, yet do not represent the full extent of the progress made since the introduction of milk recording in 1903. It is estimated that milk record herds generally are at the present time giving higher average yields than unrecorded herds to the extent of considerably over 200 gallons per cow per annum.

Improvement from milk recording is not confined to herds officially recorded in 1931. A very much larger number, about twice as many herds, have been tested and recorded for longer or shorter periods since the Association's scheme of milk recording was introduced. And when we consider the spread or diffusion of the benefits arising directly or indirectly from milk recording, we find that these penetrate widely in various directions other than that of individual members of milk recording societies. For example, there is the effect on the remaining four-fifths of the dairy herds of the country. The wide dissemination annually of milk record stock bulls and milk record cows for breeding purposes among untested herds alone must exercise an incalculable improving influence on a very large number of these herds. Such influence is increasing with the extension of the practice of using only milk record bulls in dairy herds.

There is also the powerful educational influence and force of example permeating and leavening the whole mass of dairy farmers, and gradually creating a new habit of thought in the realm of milk production. If a census could be taken in this connection, it would probably be found that a very considerable proportion of herd owners outside the membership of milk recording societies are in one way or another testing and recording the milk yields of their herds who would never have done so had systematic or official milk recording not been in operation. The same consideration applies to the more enlightened methods of selecting, breeding and feeding on milk record lines which have been adopted in many herds not officially recorded.

There is another direction in which advantage from milk recording is penetrating widely beyond the ranks of milk recording societies. Increased efficiency in the production of milk lowers the cost to the urban populations, and some portion of the return from milk recording is handed on beyond the actual milk producers.

There remains a still wider aspect of the question. Large numbers of milk record bulls and young cows are exported annually, and go to maintain and improve the milking qualities of the dairy herds of the Empire.

The Association's activities are not confined to the official testing and recording of the individual milk yields, but are directed also to assisting the herd owners to improve their methods of production by means of the records obtained. The work is to some extent of an educative or advisory nature. Official recorders have to attend a course of instruction, which includes the feeding and general management of the dairy herd, and are required to do all they can to interest and advise the members in this connection. The Association have prepared and issued to all members a concise practical guide to winter feeding of dairy cows, containing a table of fifteen selected food mixtures adapted to different conditions, and recorders and central staff take every opportunity of assisting members to follow the instructions given therein.

NEW SCHEME OF PRIVATE OR UNOFFICIAL MILK RECORDS.

The Association's new scheme of private or unofficial milk records, inaugurated in 1924, was continued in 1931 on the same lines as in previous years. The chief objects are to establish milk recording on a wider and more popular basis, and to induce a greater number ultimately to adopt the system of official authenticated milk records.

Milk recording under this scheme was administered directly by the Association. The following inducements were offered to members :—

(*a*) The hire of a set of appliances for testing purposes free of annual charge, the member to upkeep the apparatus in good condition.

(*b*) Byre sheets and record books free of charge, with stamped addressed envelopes for return of byre sheets.

(*c*) All calculations in byre sheets and record books to be made in the Superintendent's office, and the sheets and record books to be returned to the herd owners duly extended and completed.

(*d*) The total charge on members to be limited to an annual subscription to the Association at the rate of 1s. per cow tested.

Twenty new members were enrolled for 1931. Four of the members were transferred to the scheme of official recording. The total membership for 1931 was 107, and the total number of cows included 2112. This new scheme of recording had in 1931 already been the means of obtaining for official recording 38 new members of a very desirable type, which is one of the objects for which it was promoted.

There are several reasons why the membership under this scheme has not continued to increase. The better milking herds are gradually being transferred to official records. Further transfers have been arranged for season 1932. At the other extremity there are a considerable proportion of very poor herds, the owners of which are evidently unduly discouraged by the low yields recorded, and apparently have not the mentality to appreciate the possibilities of effecting the much-needed improvement. Also, a number of members, after two or three years' experience, believe they can carry on recording on similar lines independently at smaller cost.

This scheme of unofficial recording is serving a useful purpose. For reasons already given, its effect must not be measured merely by the number of herds included in any particular year; account must be taken of its educational influence and propaganda value. Thus a considerable proportion of the members who have resigned, and meantime severed their connection with the Association, have acquired the milk-recording point of view and ought ultimately to be found among members of milk recording societies. No fewer than 354 herd owners have been initiated in milk recording through its operation.

The following is a brief outline of the method of recording adopted :—

All cows in the herd yielding milk must be included in the record. Each cow must be clearly distinguished in the byre by a stall number on the wall. On the occasion of a test the cows must be milked in the same rotation evening and morning, and care must be taken that the milk of each cow for twenty-four hours, and for twenty-four hours only, is included in the test. The owner, or his agent, is required to weigh the milk of each cow evening and next morning, by means of the spring balance and pail provided, once every twenty-one to twenty-eight days, and to enter the results and other necessary particulars in the byre sheet provided by the Association; and each byre sheet must be signed by the owner, or on his behalf, as correct in respect of all entries made. The byre sheet is sent by first post to the Superintendent, and calculated and extended by the Association's staff, and returned to the owner as soon as completed. A milk record book for each herd is written out in the Association's office. The record books are closed at the end of the recording season as at 30th

November, and the results summarised and entered in special summary sheets. The record books and copies of the summary sheets, when completed and checked, are sent to the respective owners of the herds.

It must, of course, be clearly understood that the milk records compiled under this scheme are purely unofficial unauthenticated records, and have no connection with the official authenticated milk records of the Association. But from letters received and opinions expressed by members it is evident that very useful guidance may be obtained from the records.

PROSPECTS FOR 1932.

Propaganda on an extensive scale is carried through each year. Applications for membership, or for further particulars, are invited through press advertisements, articles, bills posted at auction marts, &c. All members of the Association, members of local milk recording societies, members under the scheme of unofficial records and milk recorders are requested individually to assist in obtaining new members for either scheme in their respective districts, and to send to the Superintendent the names and addresses of local dairy farmers likely to be interested. In this way a comprehensive propaganda list of possible new members is compiled. To each address on this list are sent circular letters and propaganda literature giving particulars of both systems of recording and enumerating the advantages to be obtained, and a form of application. Following on the distribution of literature, personal visits are made to most of the farms by the Association's staff, and the herd owners are classified into three groups according to the degree of probability of their becoming members. Wherever any particular interest is shown, the visit is repeated until a definite decision is reached. By this method, continued over a number of years, dairy farmers who were formerly quite indifferent have been enrolled as new members.

Similar efforts were made to obtain additional applications for membership of local societies in 1932. With the scheme of private or unofficial milk records in operation, it was possible to carry out propaganda work for both schemes simultaneously, and over 2000 circular and other letters, with propaganda literature, were distributed to dairy herd owners throughout Scotland. In addition, 1332 personal visits were made. But the severe depression in dairy farming which has existed now for eleven years was evidently having a cumulative effect on herd owners, who were seeking to cut down expenditure in every possible direction, and there was the greatest difficulty in persuading any of them to adopt any new scheme entailing the slightest additional expenditure. The number of new members for official records for season 1932 obtained to date is 62, and a considerable number of prospective new members for the year following have also been obtained. If only conditions generally in the dairying industry were more normal, with better prospects for the marketing of the produce, there would be every reason to expect a considerable increase in membership of milk recording societies in the immediate future.

All the local societies of 1931 have continued in 1932 with the exception of the small society of six members in Islay, who employed a part-time woman recorder. As a result of the severe economic depression in Islay several of the members were unwilling to continue recording, and it has been found impossible under present conditions to keep the society in existence. The number of recorders' circuits in 1932 is 40, and the number of herds and cows officially tested will be approximately the same as in the previous year.

The Committee are in a position to recommend a sufficient number of qualified recorders. All vacancies at the beginning of the year have been filled, and there remain a number of approved recorders on the waiting list. The Committee have arranged for supplies of sulphuric acid, amylic alcohol and milk-testing apparatus for local societies in 1932.

With regard to unofficial records, 21 new members have been enrolled. Two of the members have been transferred to the scheme of official recording for season 1932, making a total of 40 transferred. The total membership for unofficial recording at present is 107, with approximately 2120 cows.

GENERAL REVIEW.

The system of official milk recording which was inaugurated in Scotland in 1903 was based almost entirely on the Danish model. A great deal has been heard of Denmark and her admirable system of dairying during the last three decades. We are afraid much of this publicity has carried little or no conviction to the majority of practical dairy farmers in this country, probably on account of the difficulty in making similar headway here ; a good deal of it has been attributed merely to the Dane's love of propaganda. The holding of the great International Dairy Congress at Copenhagen in 1931 has drawn further attention to that country. We attended the Congress as a delegate from the Scottish Milk Records Association. As Denmark still leads in the extent to which official milk recording has been adopted, and supplies our markets annually with a large proportion of our requirements in butter, it may be of interest to give here in the limited space at our disposal our own impressions of Danish dairying, or such as could be gained during a six days' visit under the circumstances enjoined by attendance at the Congress. We propose to refrain as far as possible from tiresome statistics and rather to apply in a general sense the three tests: (1) intensity of production; (2) quality of produce; (3) the standard of living of the people in the industry. If wrong impressions are conveyed, we apologise to our Danish friends, and plead the shortness of our visit, the limited opportunities available and the difficulties encountered with the language.

We do not refer at any length to the Congress proper. A complete official report has been printed and issued. Elaborate arrangements were made for the convenience and entertainment of the delegates and other members. The Congress was held in the Houses of Parliament, and was divided into five sections according to subjects, five papers being read simultaneously and discussed. A great mass of material was presented, much of which was of more direct interest to the scientist than to the practical milk producer. One impression was that of a lack of economy, in time particularly. Too many papers were read, and there was considerable overlapping. We listened to long historical accounts relating to backward countries which were of little or no real importance to the majority of the delegates. General interest in the proceedings waned as the Congress proceeded; this was reflected in the attendances at the later meetings. On the whole, the Congress was interesting and instructive, though probably its chief value arose from the personal contacts made with members from other countries and the stimulating effect on the minds of members generally.

Attendance at the Congress encroached greatly on the time and opportunities for seeing something of Danish agriculture, which was one of the main objects of our visit. We joined various afternoon excursions from Copenhagen to dairy farms and creameries. These excursions were arranged by the Congress Committee, and therefore our arrival at each place of call was expected and presumably everything prepared for our inspection. Of far greater interest and value from our point of view was the whole-day private tour among farms of various sizes which we undertook by hired motor-car in company with other three delegates from Scotland. We were particularly fortunate in our driver, who was an English-speaking Dane directly related to the farming community and well versed in rural affairs. We toured a part of the island of Zealand, north-east of Copenhagen, stopping at each place of interest to us and requesting to be allowed to look around. Permission was readily given at all the farms called at, about ten in number, and we were shown everything we wished to see; the wearing of Congress badges perhaps had something to do with our ready reception. On this tour we saw things in their usual condition, without preparation for visitors.

The climate of Denmark is very similar to that of this country: on the whole, well adapted to the growth of crops suitable for milk production. The cultivated soil also resembles that of Scotland in its varied character—from poor heath and poor sand to rich heavy land; though in the case of Denmark a very much higher proportion is suitable for cultivation—somewhere about 80 per cent. In the districts visited on our tours the soil was generally good, with parts of a more sandy and less fertile character.

Crops were good, but no better than on similar soil well farmed in Scotland. The average size of Danish farms is 40 acres, the majority being much smaller. The small farms give better opportunity for intensive cultivation. Good farming appeared to be more general than in this country, and the crops more varied in character. In a few cases cows were seen loose on pasture, but in most instances they were tethered and eating grass of longer growth. Tethered cows are moved thrice daily, and reap all the crop as they move forward. Water has to be conveyed to them at least once daily. These two operations add considerably to the labour item. In some cases forage crops are cut, and fed to the cows indoors.

The population of Denmark is 3,540,000, and the number of cattle is given as 3,101,000, or about 87 per 100 of the human population. In this respect she is one of the richest countries in the world; also in cattle to cultivated area. Of the total cattle, about 52 per cent are milch cows. The cows we saw were mostly of a good dairy type and looked like giving a good yield of milk, though many also were to be seen not likely to maintain the reputation widely credited to Danish cows,—more perhaps than one would have expected. But not all the dairy cows in Denmark are good milkers. The average annual milk yield per cow for the whole of the milch cows of the country is estimated at about 730 gallons, with a milk-fat percentage of about 3·75. Considering the density of the cow population, the Danish farmers have made good progress in intensive milk production.

The dairying industry is the chief industry of Denmark. For many years the authorities have done much to foster this industry by comprehensive measures designed to increase production and raise the quality of the produce. The chief product of the dairy industry is butter, which is also by value the largest item in Denmark's total export. Butter must not be exported from Denmark except when marked with the 'Lur Brand.' This mark may be applied only to the produce of creameries authorised to use it and under regular inspection and control. A certain standard of quality must be maintained, otherwise the creamery is deprived of the right to use the 'Lur Brand' and the butter from that creamery cannot meantime be exported. We personally inspected butter on the premises at three creameries, and found the quality very satisfactory. Inferior butter is kept for the Danish home market, and quantities of poor-quality butter are imported.

Both in quantity and in quality the dairy produce of Denmark has reached a high standard. These are surely good tests to apply to any system. The Danes have made good use of the opportunities open to them under the prevailing natural and economic conditions.

The success of Denmark in producing a relatively large quantity of dairy produce of fine quality naturally raises such questions as: How has this success been achieved? Could not similar measures be applied in Scotland with equally good results? In considering these questions it seems to us we must go back a bit in the economic history of the country. More than fifty years ago Danish agriculture underwent a complete change. For centuries her main exports had been bullocks, or other live cattle, and grain. But the era of cheap freights and keen foreign competition brought a fall in the price of grain to below the Danish cost of production. Her home market was flooded with cheap foreign grain, and the position of the Danish farmer became deplorable. At this crisis the shrewder members of the agricultural community began to utilise and turn to good account the home-grown grain for feeding cattle, and others soon followed their example. The principal aim became that of producing heavy crops for home feeding, and from being a grain-exporting country Denmark became in a relatively short period an importer of cattle feeding-stuffs, and turned over extensively to the production of butter, bacon and eggs. Since 1861 the number of dairy cows has been more than doubled, and the average yield of milk per cow more than trebled. To-day there are more pigs than people in Denmark, and 87 head of cattle per 100 of the human population. By such adaptation to circumstances on the large scale an economic crisis was ultimately turned into a position of comparative prosperity.

It may be held that such results have been very largely due to the measures adopted by the authorities to foster organisation and co-operation among the dairy farmers and to the excellent systems of secondary and technical education which have been built up. A very complete scheme of agricultural education has been evolved, and a relatively large number of extension lecturers, technical instructors and official experts are employed throughout the country. But experience in Scotland and elsewhere shows that the existence of such facilities may not have very marked effect unless the rank and file of farmers show some eagerness to make use of them. Why, then, the success of Denmark? We believe it has been primarily due to two conditions which happened to prevail at that period. The dire economic straits to which the small farmers were reduced made them generally amenable to outside influences of this nature. Something had to be done; they were literally faced with bankruptcy and starvation. They were willing to turn to and work hard at animal husbandry or anything else that held out promise of a livelihood.

To the majority dairying was an entirely new industry. This new avenue was eagerly followed. They sought to acquire a scientific and practical knowledge of the industry, and were willing to be guided by the instructors and experts ready to advise them. They were free from the hampering traditions and rule-of-thumb methods of many generations of ancestors, which seem still to bind hand and foot so many of our present-day dairy farmers in Scotland. Thus it is conceivable that in some circumstances the best farmer is not born on the land, or to the system of farming which he is to practise.

Of the total milk produced in Denmark 85 per cent is dealt with at the creameries, and of this quantity 96½ per cent is made into butter. The question naturally arises: Why is butter and not cheese the staple dairy product of the country? Under the conditions prevailing in Scotland cheese-making gives the better return. The reason may become clear when the circumstances are considered. The average dairy farm carries only about eight cows. It was not economically possible to employ a skilled dairymaid and provide adequate dairy premises at all the small farms. In the latter respect the places we visited were poorly provided. Most of the byres would not pass inspection in Scotland, even on a low standard. The farm steadings with very few exceptions were very old, and appeared to have been converted from arable farming purposes with the minimum of outlay. Dairy accommodation as we know it in Scotland was practically non-existent; often only a dark damp corner for a milk cooler, with hardly a suitable place to store merely the cleansed milk cans. But under the creamery system adopted more is hardly necessary; almost everything depends upon the equipment and management at the creamery. The sterilised milk cans are brought from the creamery. The freshly drawn milk—in many cases the cows are milked out of doors during the summer months—is simply run over the cooler and conveyed to the creamery as quickly as possible. Here butter can be made on the most approved lines under expert management. In butter-making, as distinct from cheese-making, the milk or cream is first pasteurised, and by this process freed from the risk of the harmful bacterial taints that in cheese-making would be almost certain to arise. Obviously this was the most suitable system for Denmark when dairying was introduced.

The Danes believe that much of their success in milk production is the result of systematic milk recording ; of judging, breeding and feeding their dairy stock according to production tests. Reference has already been made to the fact that when official milk recording was first adopted in Scotland in 1903 it was based very closely on the Danish model. It is interesting, therefore, to compare the systems in the two countries to-day. Little or no change has been made in the routine of official milk recording in Denmark during the last thirty years. The method followed to-day is practically identical with that in Scotland up to 1914. No regular system of checking at the farm similar to the Scottish surprise double tests or check tests has been introduced, the only check available being the rough-and-ready one obtained by comparing the recorder's total with the volume of milk delivered daily to the local creamery. In Scotland authenticity in the milk records is one of the essentials. Improvements have been introduced under the Scottish system during this period, as the result of which the milk records are more generally accepted as fully authenticated. The system of checking applies not only to the good faith of the herd owner but also to the milk weighing and fat testing by the recorders, and to the calculations and entries. Are the Danes satisfied with a less close approximation to actual milk yields in their official milk records ? Do they deal more in round numbers ? Compared with Scotland, the majority of recorded herds are very small. It is permitted for the recorder to test two small herds in one twenty-four hour period where these are sufficiently near each other, and for the milking hours to be changed for this purpose.

Official milk recording has become more general in Denmark than in any other country, and apparently the records obtained are more directly and more generally applied in herd management. More than one-third of the purely dairy cows in Denmark are being systematically milk recorded. The corresponding figure for Scotland is not available. In the official returns the number of purely dairy cows is not separately stated ; but the proportion milk-recorded must be considerably less than in Denmark, with other countries far behind.

Why has Denmark attained the predominant position in milk recording ? The Danish Government give generous assistance, but with the small number of cows in the average herd the cost of recording per cow is not greatly different in Denmark from Scotland. Probably this attainment also is a result of the conditions following from the collapse of the former system of agriculture already referred to. These conditions rendered imperative a willingness to try any and every means likely to enable them to earn a livelihood from the soil, and fostered the spirit of open-mindedness and of co-operation. It is a mistake to imagine that Danish farmers were natural co-operators any more than the farmers of Scotland; in a great measure co-operation was by circumstances forced upon them. The idea of co-operation has got a very firm hold on the dairy farmers in Denmark. To-day no less than 90 per cent of the milk producers are members of co-operative creameries, handling among them 85 per cent of the milk turn-over of the country. Yet even in Denmark the majority of the milk producers still regard official milk recording as a speciality, as something indispensable to the industry but not essential to every dairy farmer individually. Many, however, have adopted the practice of keeping their own private milk records.

Evidently experience in Denmark from using milk records in the breeding of dairy cattle has been very similar to that elsewhere; the mating of high-yielding strains has not produced high-yielding progeny to the extent anticipated. It has been found that there may often be a wide difference between a high-yielding cow and a cow which when mated to a good bull can breed only high-yielding stock. Improvement in herd average milk yield has been the result more of discarding low-yielders than of ceasing to breed them. Milk recording farmers have not so far as expected bred fewer poor milkers, but have merely ceased to keep them. But the Danes have appreciated the importance of this problem of eliminating the breeding taint of low-yieldingness from their dairy stock. The steps they are now taking in this direction are on sounder lines—namely, the selection of proven sires and proven dams, or sires and dams with daughters which have produced better milk yields than their own dams.

There is another side to the Danish picture—a darker side. We have found that production is intensive and quality of a high standard. Judged by these two important features only, there is every appearance of success. But Danish butter is retailed in our cities, towns and villages at relatively very low prices—prices with which our own dairy farmers cannot or will not compete. What about the Danish producers? Are they even now obtaining the due reward of their labours? Where, for instance, does payment to meet the shipping and other extra trading charges come from? Is it out of the real standard of living of the producers?

The butter production and export business of Denmark is well organised through the medium of the numerous local creameries and other agencies, and only butter of the finest quality is exported. But the whole of the expenses of transport and marketing must be considerable before the British consumer is reached, and these have all to be met before the return to the actual producer can be determined. Assuming a high degree of efficiency throughout, it still remains that the producer has to take for his butter just what he can get for it. This is the basis of the Danish system.

The perfection of the co-operative system among Danish farmers has become a household word, and it might be expected that there, if anywhere, the actual producers would be in a position to insist upon getting the full fruits of their industry. Yet there appeared to be a greater difference between the real standard of living of the farmers in Denmark and that of the manufacturing, trading and commercial classes than in this country. It was evident that very long working hours and a relatively low standard of living was the general rule for the farmers, and that a fair share was not to the producer, even in Denmark.

Too often man and wife have each to do the work of more than one person, taking what they can get for their labour and simply making it do. The reason they do so much is probably because they feel they are working for themselves and not for an employer. In many cases they are tied up by bonds and mortgages to such an extent that their independence is more imaginary than real.

ANALYSES FOR MEMBERS DURING 1931.

By Dr J. F. TOCHER, Aberdeen, Analyst to the Society.

THE number of samples submitted by members for analysis during the year 1931 was 253, of which 32 were fertilisers, 43 were feeding-stuffs, 63 were milks, 53 were waters and 4 were soils. There were 42 examinations for poisons and 16 miscellaneous samples. The following table (Table I.) shows the number and nature of the samples analysed during the past six years :—

TABLE I.

	1931.	1930.	1929.	1928.	1927.	1926.
Fertilisers	32	34	45	40	44	61
Feeding-stuffs	43	27	34	56	37	43
Waters	53	37	52	50	26	26
Other samples	125	129	72	128	121	130
	253	227	203	274	228	260

FERTILISERS.

General.—The fertilisers examined may be classified as follows :—

TABLE II.

Compound fertilisers	13
Ground mineral phosphates	4
Sulphates of ammonia	2
Basic slags	3
Dissolved bones	2
Potash fertilisers	2
Ground limestone	1
Superphosphate	1
Nitro-chalk	2
Bone meal	1
Proprietary fertiliser	1
	32

The average composition of the compound fertilisers analysed during 1931 was found to be 5·08 per cent nitrogen, 6·71 per cent soluble phosphoric acid, 3·38 per cent insoluble phosphoric acid and 6·78 per cent potash. The proportion of nitrogen in the compound fertilisers ranged from 2·5 to 8·44 per cent. The variation in soluble phosphoric acid was from 5·42 to 8·60 per cent, while that of insoluble phosphoric acid was from 1·72 per cent to 8·13 per cent. The proportion of potash varied from 3·09 per cent to 10·85 per cent. The following table (Table III.) shows the results of analyses of the samples of compound fertilisers analysed during the year :—

TABLE III.

	Nitrogen.	Soluble phosphoric acid.	Insoluble phosphoric acid.	Potash.
Potato manure . .	3·40	8·60	2·62	7·11
,, . .	6·41	6·75	2·56	9·04
,, . .	4·38	6·89	2·48	10·85
,, . .	4·85	7·02	2·20	9·57
,, . .	5·18	6·74	1·93	10·10
,, . .	4·18	6·87	2·41	10·20
Compound manure . .	6·52	6·18	3·97	5·50
,, . .	3·79	6·76	3·23	4·51
,, . .	3·78	7·10	3·05	4·63
Turnip manure . .	2·50	7·68	8·13	3·09
,, . .	8·44	5·58	1·72	4·89
Grain and grass manure .	4·61	5·42	7·81	4·37
Grass manure . . .	7·96	5·69	1·82	4·31

Two samples of sulphate of potash of Scottish origin contained respectively 42·61 and 42·28 per cent of potash. One of them contained chloride equivalent to 9·51 per cent chloride of potash. The samples of basic slag analysed had an unusually high citric solubility, amounting in one case to 98 per cent of the total phosphoric acid. The proportions of insoluble phosphoric acid in four samples of North African phosphate varied from 26·66 to 28·27 per cent. Expressed as tricalcium phosphate, the variation in the samples was from 58 to 62 per cent. The average for ground mineral phosphate is 26 per cent phosphoric acid, equivalent to 57 per cent tricalcium phosphate. A sample of bone meal was found to contain 4·58 per cent of nitrogen and 21·39 per cent of insoluble phosphoric acid, equal to 46·7 per cent of tricalcium phosphate. An average bone meal contains 4 per cent nitrogen and 20·4 per cent phosphoric acid, equal to 43·7 per cent of tricalcium phosphate. Two samples of nitro-chalk contained respectively 15·88 and 15·24 per cent of nitrogen. The average proportion of nitrogen in this fertiliser is 15·5 per cent. One of the samples of dissolved bones examined was found to contain only 1·24 per cent of nitrogen, but it was designated " dissolved bone compound " and not " pure dissolved bones."

FEEDING-STUFFS.

Forty-three samples of feeding-stuffs were analysed during the year, including the usual compound cakes and meals and most of the concentrates in use at the present time.

The following table (Table IV.) shows the composition of the feeding-stuffs analysed :—

TABLE IV.

	Oil.	Albuminoids.	Soluble carbohydrates.	Fibre.	Ash.	Moisture.
Floor sweepings	18·45	6·19	62·61	0·80	2·02	9·93
Compound feeding-stuff	4·55	14·37	56·15	4·48	8·65	11·80
,,	16·92	19·25	38·82	5·61	9·32	10·08
,,	17·75	17·94	..	6·27	..	..
,,	15·45	19·25	..	5·70	..	..
,,	7·78	26·13	39·69	9·13	6·60	10·67
,,	5·78	23·00	37·67	15·52	5·90	12·13
Poultry meal	2·70	9·53	..	7·52	..	..
,,	3·80	15·12	60·46	4·64	3·96	12·02
,,	3·15	17·06	57·38	5·22	4·14	13·05
,,	3·62	17·19	56·80	5·33	4·47	12·59
,,	4·49	16·31	50·54	6·25	10·04	12·37
Grass	0·47	3·19	8·67	5·40	1·50	80·77
Bean meal	1·27	25·06	48·95	8·07	3·80	12·85
,,	1·25	23·69	51·79	5·77	4·60	12·90
,,	1·26	22.46	..	..	..	..
,,	1·84	22·69	..	..	..	..
Iodised lay mash	4·30	18·44	..	4·18	..	..
Soya bean meal	1·17	44·31	..	..	..	..
Oats	4·33	8·00	61·49	8·05	3·01	15·12
,,	4·95	7·56	61·85	8·88	2·89	13·87
Dried grains	7·49	18·81	..	..	..	..
,,	7·46	18·31	45·53	15·67	2·30	10·73
Linseed cake	9·62	31·00	..	..	..	..
Calcutta linseed	4·67	28·75	..	..	..	..
Flour residue	1·47	11·75	72·65	1·22	2·76	10·15
Special laying meal	5·57	17·94	..	5·95	..	..
Iodol	18·07	19·91	..	5·80	..	..
Timothy hay	1·43	5·31	..	..	..	11·08
Bone and meat meal	11·67	44·94	..	Tric. Phos.	28·64	5·84
Cottonseed cake	3·60	20·12	..	27·40	..	..
,,	3·80	21·88	..	..	..	..
Rye flour	0·87	8·12	76·93	0·30	0·55	13·23
Barley meal	2·09	11·00	..	..	..	..
Ground oats	5·55	12·31	..	..	..	..
Middlings	3·87	16·62	..	..	..	..
Barley meal	2·20	11·00	..	..	..	..
Ground oats	4·67	11·87	..	..	..	..
Middlings	3·75	17·37	..	..	..	..
Ensilage	0·48	4·27	9·67	7·17	1·78	76·63
,,	0·51	3·20	8·41	7·76	1·19	78·93
,,	0·58	2·50	8·55	9·29	3·75	75·33

A sample of Calcutta linseed cake contained 28·75 per cent of albuminoids, but only 4·67 per cent of oil—an exceptionally low proportion for this feeding-stuff, the average being 9 per cent. One of the samples of cottonseed cake contained 27·40 per cent of fibre, a considerably higher proportion than is usual. The percentages of oil and albuminoids in this sample were found to be in accordance with the guarantee within the limits of variation prescribed. The average composition of seven samples of poultry meal was as follows: oil, 3·95 per cent; albuminoids, 15·94 per cent; and fibre, 5·58 per cent. One of the samples was found to contain a minute proportion of iodine amounting to about 30 parts per million. Feeding-stuffs containing traces of iodine in the form of potassium iodide have recently appeared on the market as a result of publication of scientific papers bearing on the presence of iodine in feeding-stuffs. Several samples of proprietary compound feeding-stuffs were analysed. These all had high proportions of oil and approximately 6 per cent of fibre. One of the samples contained 2 per cent of sand, an excessive proportion in the case of a highly priced and presumably carefully prepared article. A sample of soya bean meal was found to be of the extracted variety and contained only 1·17 per cent of oil. The samples of bean meal examined were all of satisfactory quality.

MILKS.

The number of milks found to be deficient was unusually low during 1931. Three samples were deficient in fat, four in solids-not-fat and only one in both fat and solids, when compared with the presumptive limits prescribed by the Ministry of Agriculture. The proportion of butter-fat in the samples varied from 1·70 per cent to 6·85 per cent, while that of solids-not-fat ranged from 7·49 per cent to 9·87 per cent. The following table (Table V.) gives the results of analyses of the samples of milk examined:—

TABLE V.

No.	Fat, per cent.	Solids-not-fat, per cent.	No.	Fat, per cent.	Solids-not-fat, per cent.
1	6·85	8·31	16	2·85	8·80
2	4·90	8·78	17	3·50	8·59
3	4·60	8·92	18	3·90	8·43
4	4·10	8·69	19	3·85	9·07
5	3·40	8·70	20	4·79	9·08
6	5·10	8·98	21	5·30	9·87
7	4·20	8·87	22	2·85	7·49
8	4·30	8·96	23	4·35	8·90
9	4·45	8·57	24	4·15	8·70
10	1·70	8·86	25	3·70	8·56
11	4·89	9·01	26	3·60	8·57
12	4·35	9·03	27	3·70	8·52
13	3·30	8·84	28	3·55	8·75
14	3·95	8·53	29	3·20	9·25
15	3·28	8·17	30	3·70	8·53

No.	Fat, per cent.	Solids-not-fat, per cent.	No.	Fat, per cent.	Solids-not-fat, per cent.
31	3·00	8·79	48	3·95	..
32	3·50	8·88	49	4·25	..
33	3·10	8·78	50	3·60	..
34	3·15	9·07	51	3·80	..
35	4·00	8·65	52	4·10	..
36	3·55	8·58	53	3·50	..
37	3·20	8·60	54	3·85	..
38	4·00	8·90	55	3·90	..
39	4·30	8·52	56	4·00	..
40	4·70	9·20	57	3·75	..
41	4·05	8·91	58	3·75	..
42	4·10	..	59	5·05	..
43	4·90	..	60	4·35	..
44	4·05	..	61	3·90	..
45	3·25	..	62	4·05	..
46	3·10	..	63	3·85	..
47	3·70	..			

The following table (Table VI.) shows the nature of the distributions of butter-fat and solids-not-fat in these samples:—

TABLE VI.

Butter-fat, percentage.	Frequency.	Solids-not-fat, percentage.	Frequency.
1 to 2	1	7 to 7·5	1
2 to 3	2	7·5 to 8	..
3 to 4	35	8 to 8·5	3
4 to 5	21	8·5 to 9	29
5 to 6	3	9 to 9·5	7
6 to 7	1	9·5 to 10	1
	63		41

WATERS.

During the year 48 samples of water were examined for potability, and 5 were examined for the presence of lead and other metals. Thirty-one samples were passed as suitable for domestic use, and 17 were of doubtful or of bad quality.

The presence of dissolved copper is a very common cause of the bluish appearance in the hot-water circulation. The colour on the bath walls and on sponges can be removed by treatment with dilute sulphurous acid. Neutralisation of the water supply prevents its solvent action on copper. Soft waters frequently have a distinct solvent action on the zinc of galvanised iron piping. One of the samples examined contained so much zinc in solution that salts of the metal rendered the water quite turbid on heating. Two samples were found to contain lead in solution, and several were found to be plumbo-solvent. The use of iron or coated piping was recommended in these cases. One of the samples examined for potability contained over 26 degrees of temporary hardness, equal to 18 grains per gallon expressed as carbonate of lime.

POISONS.

Forty-two examinations for poisons were made during the year. In 16 cases positive results were obtained. Lead was found to be the cause of death in several cases of cattle poisoning, while phosphorus was the cause of death of a pig. In connection with some of the lead cases, the metal was subsequently found in material containing paint, recovered from a field to which the animals had access. Two samples of linseed cake were found to contain castor seed. The toxic substance, gossypol, was found to be present in a sample of cotton cake, and was the probable cause of death of animals fed with the cake. In the case of feeding-stuffs new to the animals, it is advisable to give small quantities at first and to increase the proportion gradually. Bean meal is sometimes the cause of scouring and of symptoms indicating that the proportion of protein present in the ration is too high. It is usually recommended that the amount of this feeding-stuff should not exceed one quarter of the whole of the concentrates fed to the animals. Caustic lime was found in three samples of water sent from a lake, the water of which was suspected to be injurious or dangerous to health. Partially burnt limestone containing 20 per cent of caustic lime was subsequently found in material recovered from a burst drain in the vicinity of the lake. Excessive acidity of the ration was reported as the cause of death of several fowls, the crop contents of which were found to be acid to the extent of 0·4 per cent expressed as sulphuric acid.

MISCELLANEOUS.

A sample of mineral mixture was found to contain about 50 per cent of calcium carbonate and 20 per cent each of calcium phosphate and sodium chloride. Smaller quantities of potassium chloride and several other ingredients were also present. A sample of effluent from a silo contained 2·44 per cent of albuminoids and 3·71 per cent of soluble carbohydrates, indicating a considerable loss of nutrient material in the drainage. The loss amounted approximately to 10 food units, representing a value of 8s. per ton of fluid.

THE CEREAL AND OTHER CROPS OF SCOTLAND FOR 1931.

THE following comparison of the cereal and other crops of 1931 with those of the previous year has been prepared by the Secretary of the Society from answers to queries sent to leading agriculturists in different parts of the country.

The queries issued by the Secretary were in the following terms:—

1. What was the quantity, per imperial acre, and quality of grain and straw, as compared with last year, of the following crops? The quantity of each crop to be stated in bushels. What quantity of seed is generally sown per acre?—(1) Wheat, (2) Barley, (3) Oats.
2. Did the harvest begin at the usual time, or did it begin before or after the usual time? and if so, how long?
3. What was the quantity, per imperial acre, and quality of the hay crop, as compared with last year, both as regards ryegrass and clover respectively? The quantity to be stated in tons and cwts.
4. Was the meadow hay crop more or less productive than last year?
5. What was the yield of the potato crop, per imperial acre, as compared with last year? The quantity to be stated in tons and cwts. Was there any disease? and if so, to what extent, and when did it commence? Were any new varieties planted, and with what result?
6. What was the weight of the turnip crop, per imperial acre, and the quality, as compared with last year? The weight of the turnip crop to be stated in tons and cwts. How did the crop braird? Was more than one sowing required? and why?
7. Were the crops injured by insects? State the kinds of insects. Was the damage greater or less than usual?
8. Were the crops injured by weeds? State the kinds of weeds. Was the damage greater or less than usual?
9. Were the pastures during the season of average growth and quality with last year?
10. How did stock thrive on them?
11. Have cattle and sheep been free from disease?
12. What was the quality of the clip of wool, and was it over or under the average?

From the answers received, the following notes and statistics have been compiled :—

EDINBURGH DISTRICT.

MID-LOTHIAN. *Wheat*—36 to 40 bushels per acre ; poor yield ; straw about 35 cwt. ; 4 bushels sown. *Barley*—38 bushels per acre ; poor yield ; straw 18 cwt. ; 3 to 4 bushels sown. *Oats*—44 to 48 bushels per acre ; poor yield ; straw 22 cwt. ; seed 4 to 6 bushels per acre. *Harvest*—About usual time. *Hay*—55 to 60 cwt. per acre ; poor quality. *Meadow Hay*—Not much grown. *Potatoes*—6 tons per acre early varieties ; not more than 5 tons per acre late varieties ; a good deal of disease in lates. *Turnips*—18 tons per acre ; variable crop, with great differences on adjoining farms. *Insects*—Not injured to any extent. *Weeds*—No great damage, but during June and July great difficulty was experienced in keeping surface weeds in check owing to continuous rains. *Pastures*—Average, but poor quality. *Live Stock*—Throve fairly well, but below average. Cattle and sheep free from disease. *Clip of Wool*—About average.

WEST LOTHIAN. *Wheat*—36 bushels per acre ; straw fair ; grain damaged by weather, few good samples ; seed sown, 4 bushels per acre broadcast and 3 to 3½ bushels per acre drilled. *Barley*—35 bushels per acre ; straw and grain damaged by weather ; seed sown, 3½ to 4 bushels per acre. *Oats*—48 to 52 bushels per acre ; straw where harvested early good, later damaged by rain, grain same ; seed sown, 6 bushels per acre broadcast, 5 bushels where drilled ; new varieties 3½ bushels per acre. *Harvest*—Began a few days later than previous year, except in the case of wheat, which was approximately three weeks later, owing to wet weather and lack of sunshine. *Hay*—2 tons per acre ; fair quality where harvested in good weather. *Meadow Hay*—Not extensively grown. *Potatoes*—Earlies, 6 tons per acre as compared with 8 tons last year ; not extensively grown. Main crops, 7 tons per acre as compared with 9 tons last year. This would principally apply to crops grown on light dry lands ; where grown on heavy land practically a failure. Disease prevalent ; no new varieties planted. *Turnips*—13 to 18 tons per acre ; good average crops on light land ; Swedes on heavy land practically a failure ; brairded fairly well and even ; practically no resowing. *Insects*—Less injury than usual ; use of ‘ Ceresan ’ seed dressing considered beneficial, as brairds came away faster ; a few fields of lea oats damaged by leather-jacket. *Weeds*—Caused some damage, being difficult to overcome owing to very wet season. *Pastures*—Average growth ; quality not so good. *Live Stock*—Cattle and sheep had a poor grazing season owing to excessive wet. Cattle free from disease ; more lame sheep than usual, especially the heavier breeds. *Clip of Wool*—Average clip and of fair quality.

EAST LOTHIAN (Upper). *Wheat*—24 bushels per acre ; looked a full average crop, but the wet cold summer had a detrimental effect on the grain maturing, consequently many of the ears were only partly filled, and the samples generally were of a very inferior quality, the worst for many years ; yield per acre very disappointing ; 4

bushels per acre generally sown where drilled. *Barley*—Suffered greatly for the same reasons, especially on heavy and clay flat lands; deficient in both straw and grain; the grain under such conditions was better quality than predicted in the early season, but the quantity was short of the average by about 8 bushels per acre; straw 5 to 6 cwt. per acre less than the average. *Oats*—Suffered less than other cereals from the unfortunate summer; the quantity of straw was a full average, and the grain, both in quantity and quality, was good and harvested in the best of order; fodder excellent; 48 to 50 bushels per acre. *Harvest*—Was a week later than usual, but the weather was good for securing the crops, and the harvest was of short duration. *Hay*—A full average in quantity, but the long spell of unsettled weather ruined the quality, which will be looked upon as the worst for many years, much of it being only fit for bedding. *Meadow Hay*—Little grown. *Potatoes*—Very disappointing; only 60 per cent of last year, which was a little above an average; many crops on clay land would not exceed 4½ tons per acre, and large quantities were destroyed by floods; some varieties where not sprayed suffered very badly from disease. *Turnips*—Brairded well and came early to the hoe; weather conditions restricted the sowing in the higher districts, but with the mild autumn growth continued longer than usual, and crops finished slightly over an average; 20 to 23 tons where not affected by finger-and-toe disease, which was more prevalent than usual on heavy soil. *Insects*—No damage. *Weeds*—All weeds flourished during the wet summer in the potato and turnip crops, and caused more than usual expense in cleaning both by horse and hand. *Pastures*—Were abundant all season. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—About an average.

EAST LOTHIAN (Lower). *Wheat*—The crop looked excellent, and was harvested in first-class order, but yields turned out most disappointing; as low as 24 bushels per acre was recorded from good farms, and few would reach 40 bushels; grain badly developed and of poor quality, owing to wet season and want of sunshine; straw about 2 tons per acre; seed 3 to 3½ bushels drilled, up to 4 bushels per acre when broadcasted. *Barley*—Crop considerably below average and quality of grain very indifferent, owing to wet sunless summer, but was greatly redeemed by being harvested under most favourable conditions; 32 to 48 bushels per acre; only a small proportion of samples of good malting quality; straw light; seed 3 to 3½ bushels per acre. *Oats*—A bulky crop; yield of grain poor but very well got; 48 to 72 bushels per acre—about 25 per cent short of a really good season; straw up to the average, about 35 cwt. and of good quality. *Harvest*—Began a week or ten days later than usual; it was a September harvest, and owing to weather conditions taking an exceptionally favourable turn after a long spell of wet weather, the harvest was unexpectedly easy and of short duration, especially considering the state of many of the fields; indeed the good harvest weather just saved the situation. *Hay*—Ryegrass and clover 'seeds' hay was a good crop; up to 3 tons per acre, but of inferior quality, and much damaged by weather in making. *Meadow Hay*—None grown. *Potatoes*—Yields were very variable; in some cases as low as 4 tons per acre and up to 9 tons on a few favourably situated fields; many fields were ruined by the wet weather and flooding; haulms mostly went down with disease, which, however, was not serious in the tubers; the average yield would be between 6 and 7 tons per acre, and the quality only fair. *Turnips*—Throughout the summer turnips did badly owing to excessively wet weather; in early autumn the prospect was very poor, a scarcity being generally anticipated, but a very genial autumn, well extended into a very mild open winter, belied all expectations; turnips kept on growing, and in the end, where not diseased, reached nearly an average yield; finger-and-toe more common than usual. *Insects*—Attacks were insignificant. *Weeds*—All kinds of weeds were much more troublesome than usual owing to the wet weather, and very limited facility for keeping them down. *Pastures*—Were exceptionally abundant everywhere, but the feeding quality of the grass was not up to the average. *Live Stock*—Throve indifferently. Cattle and sheep free from disease. *Clip of Wool*—About an average.

BORDER DISTRICT.

BERWICKSHIRE (Merse). *Wheat*—Sowings again showed a further reduction in the acreage (100 acres); little or no spring wheats were sown; brairds came away well, and up to June prospects were good; during summer cold and wet retarded growth, ears not appearing until well on in July; ripening was very slow, and the crop was then a bad colour; harvest, though late, was good, and the crop was handled expeditiously; yield much below average, up to 32 bushels; quality poor; natural weight 61 lb.; straw short and brittle; from 24 to 28 cwt. per acre; seed 4 bushels per acre. *Barley*—Also showed a further reduction this year of 1336 acres; the braird came away very well; by the end of June had gone off badly—brown and washed-looking; ears made a late appearance, and as these filled the outlook became less promising; except where there was an excess of clover harvesting was easy; thrashing results were much below average; few over 32 bushels, and many in the twenties; quality also under average; natural weight 50 lb.; straw yield 21 cwt.; 3 to 3½ bushels sown. *Oats*—Conditions affected oats in the same way as barley; the acreage was down fully 400 acres; by harvest time, though the crop mostly was laid, it afforded a good one-way cut; yield 32 to 45 bushels, of fair quality; natural weight 42 lb.; straw good and clean, varying in bulk from 21 to 26 cwt.; seed 4 to 6 bushels per acre. *Harvest*—It was into September before harvest was general—quite two weeks later than usual. Weather was very fine all the time, and a quick clean job was made, except for excess of clover in some fields, which proved difficult to get into order for stacking. *Hay*—Weather conditions were such that it was impossible to make good hay; much of it was left standing too long in the hope of conditions getting better, and became over-ripe and twisted; the crop was an extra heavy one, 2 tons and over, but there was a large amount of waste. *Meadow Hay*—Suffered from the same cause, only more so; was very difficult to win, and much spoilt; a big crop—round about 30 cwt. *Potatoes*—The season was entirely against potatoes being a success, and the crop probably suffered more than any other; growth never was strong; great difficulty was found in properly working the land, as it never was in condition, and many patches of fields were entirely rotted out; the crop was lifted in good order and free from disease, but was an extremely light one; from 2 to 4 tons per acre, mostly undersized; the acreage was practically the same as the previous year, when a big drop took place. *Turnips*—Brairds came away easily; little if any resowing necessary; plants were long in coming to the hoe, and growth was extremely slow; land was seldom in condition to work, and weeds got the upper hand in many instances; owing to the open autumn and winter growth was continuous, and the roots swelled out to quite a reasonable crop; on the other hand, many late-sown fields were practically a failure, and could not make up leeway; yellows would run anything from 8 to 15 tons per acre, and swedes 12 to 20 tons, and that on a reduced acreage of some 1200 acres; finger-and-toe very slight. *Insects*—Season against insect life, and little or no damage to cereal or root plants. *Weeds*—Runches were prevalent in spring corn and in root fields, where it was often impossible to put horses on the land; in consequence twitch and annuals of all kinds could not be held in proper check. *Pastures*—Grass was plentiful all year, but of very doubtful quality; foggages generally were poor owing to late cutting of the hay crop; seeds very good after harvest; these and older fields kept growing all winter. *Live Stock*—Older stock did moderately, but young stock, lambs and calves, did poorly; at sale time lambs were short of condition and size. There was a very heavy crop of lambs, but losses were heavy; mortality amongst ewes after lambing was also above average. Cattle and sheep free from disease. *Clip of Wool*—Quality quite good, but weight was awanting, and also a market.

BERWICKSHIRE (Lammermoor). *Wheat*—Almost none grown. *Barley*—Under the average yield; around 32 bushels; quality good; seed, 3 to 3½ bushels per acre. *Oats*—Yield rather varied; would be under the average, say 40 bushels. Some fields laid early in the season and never properly ripened; standing crops secured in good order and quality good; seed, 4 to 5 bushels per acre. *Harvest*—Started a week to ten days later than usual; the weather was good, and the crops were quickly gathered in. *Hay*—An average crop; better than last year; 2 tons, of good quality. *Meadow Hay*—Average crop; mostly secured in fair condition; 25 to 30 cwt. *Potatoes*—An extremely poor crop, in some cases little more than the seed being secured; average yield would be 3 to 4 tons; disease did considerable damage; no new varieties of any importance planted; the worst crop of potatoes in this district for very many years. *Turnips*—About an average crop; 15 to 20 tons per acre; on the whole a better crop than last year; brairded well, and very little resowing required; finger-and-toe not so bad as last year. *Insects*—No great damage by insects. *Weeds*—Did not appear to do so much damage as last year. *Pastures*—Full average growth, but quality very deficient. *Live Stock*—Stock, especially lambs, did not thrive so well as usual; all young stock coming to the sales were considerably short of condition. Cattle and sheep free from disease. *Clip of Wool*—A rather short clip, of only fair quality.

ROXBURGHSHIRE. *Wheat*—Not much grown. *Barley*—A poor crop; yield below the average; 32 bushels per acre; quality poor in many cases through the crop being badly laid; seed, 3 bushels per acre. *Oats*—Crop was badly lodged in many cases; an average yield of grain; 32 to 56 bushels per acre; seed, 4 to 5 bushels. *Harvest*—Began at the usual time and, apart from the difficulty of cutting owing to lodging, was satisfactorily carried through. *Hay*—A very heavy crop, but was difficult to harvest owing to wet weather, and a good deal was spoilt. *Meadow Hay*—A good crop; the earlier cuts were spoilt by rain; the later cuts were got in fair order. *Potatoes*—Crop in nearly every case was a complete failure; 3 to 4 tons per acre. *Turnips*—Developed into a better crop than was at first expected; owing to bad weather in June the crop was later than usual in being sown, but grew on well through the back-end; finger-and-toe fairly prevalent. *Insects*—No injury. *Weeds*—No injury. *Pastures*—The season was very favourable for grass, and pastures were good, though a little too rank. *Live Stock*—Did not do so well as usual; excessive rain and lack of sun kept lambs rather backward. Cattle and sheep were free from disease, though there was a certain amount of contagious abortion and bovine tuberculosis. *Clip of Wool*—Rather below the average.

SELKIRKSHIRE. *Wheat*—None grown. *Barley*—Very little, if any, grown. *Oats*—There would be considerably less oats sown than last year, especially on lea; the weather was quite favourable for sowing, but the cold barren spring retarded growth, and brairds were very irregular; with a wet sunless summer oats did not ripen properly, and many farmers preferred to cut when green for fodder rather than wait for ripening, hence the yield was rather difficult to estimate; well-ripened oats, 35 bushels per acre; oats cut green, 20 bushels per acre; seed, 6 bushels per acre. *Harvest*—Very good harvest generally; rather later in commencing, but crops quickly handled, and secured in first-rate order. *Hay*—2½ tons per acre; a fairly good crop, but difficult to secure. *Meadow Hay*—A very good crop, but the wet weather in August made it difficult to secure in good order; a larger bulk than usual. *Potatoes*—Very few grown for sale; the poorest crop for years; many farmers who plant only sufficient to supply their employees have had to buy their requirements from merchants at high prices; yield very difficult to estimate, from 2 to 5 tons per acre. *Turnips*—One of the worst crops for many years; one-third less than last year; late-sown turnips, on account of the wet weather in June, made little progress all summer, but made up a lot in November and December; very little finger-and-toe; crop brairded well and there was no resowing, but the excessive rains throughout the summer soured the land and stopped growth; a most disappointing crop. *Insects*—No injury by insects, but wood-pigeons did a lot of damage to young plants. *Weeds*—Damage by weeds was greater than usual; the extremely wet state of the land made the cleaning of turnips impossible. *Pastures*—Everywhere were luxuriant, but, on account of the wet season, not of good feeding quality. *Live Stock*—Throve fairly well, but lambs did not put on condition owing to the season. Cattle and sheep free from disease. *Clip of Wool*—A good average clip.

PEEBLESSHIRE. *Wheat*—Very little, if any, grown. *Barley*—36 to 40 bushels per acre; grain not a good sample through being badly lodged. *Oats*—In good districts, and where new varieties were grown, the crop was an exceedingly good one, although it did not thrash so well as in preceding years; from 44 to 56 bushels per acre; in the higher and poorer districts from 28 to 36 bushels per acre; straw considerably above the average. *Harvest*—About the usual time; later districts got very good weather. *Hay*—Ryegrass one of the heaviest crops on record, in many cases approaching 3 tons per acre; a good average would be from 36 to 40 cwt. per acre; the quality was in most cases not good on account of a very wet haytime. *Meadow Hay*—An average crop and some of it very well got, but some not good. *Potatoes*—A most irregular crop; some farms a good average crop, while on others little more than the seed was lifted; free from disease. *Turnips*—On some farms a very good crop; on others the crop was much below the average, but on account of the open winter they improved in yield very much; little resowing was required, but where pitted early they did not keep so well as usual. *Insects*—No injury. *Weeds*—No damage. *Pastures*—On account of wet summer pastures became very rough, and there was not the same feeding in them. *Live Stock*—Were quite healthy, but on account of so much soft-grown grass, lambs, especially hill ones, lacked condition. Cattle and sheep free from disease. *Clip of Wool*—Quality very good, but hill sheep, on account of the very bad spring, clipped lighter than usual.

DUMFRIES DISTRICT.

DUMFRIES (Annandale). *Wheat*—None grown. *Barley*—Owing to the very poor demand the growing of this cereal has practically ceased. *Oats*—Sowing began about the 19th March, being a week earlier than last year. All lea oats were sown under ideal conditions, but a spell of wet weather during the last days of March and beginning of April caused a good deal of the red land to be sown under poor conditions. The weather during May and June was wet, and all crops that had not got well established received a bad check, yields being very light and far below the average. All lea oats that were early sown were good and well up to the average. The quality of both grain and straw would be about the average. Yield, 40 bushels per acre; straw, 30 cwt. per acre; seed, 4 to 6 bushels per acre. *Harvest*—Started about the same time as last year and under good but very slow weather conditions. The crop was secured in good order, except in cases of red-land oats which had been stacked too soon. Owing to the great amount of grass that is always present in a light crop a good deal of heating took place. *Hay*—About the average as to yield, but the quality, except for a few isolated cases, was poor. A long spell of wet weather during July ruined all prospects of a crop of good quality ryegrass hay. *Meadow Hay*—Was a good crop and well above the average for quantity and quality. The weather conditions were good during the making of the meadow hay, and the quality was the best for some years. *Potatoes*—A very poor crop all over, and disease worse than for some years.

The very heavy rains in May and June battered and soured the land into such a condition that nothing but a very poor yield was looked for; about 4 tons per acre. *Turnips*—Except where land was dry and in good heart the crop was the worst for a good many years. In some exceptional cases crops of up to 30 tons per acre could be seen, but the average would be hardly half that quantity. *Insects*—Pests were much about the same as last year. *Weeds*—Were very prevalent in all crops. The heavy rainfall during summer gave little opportunity to get weeds checked, and by the time the weather was favourable the hay and harvest were on, with the result that fields everywhere were a mass of weeds. *Pastures*—Were not up to the average, and stock were very slow in getting ready for the market. *Live Stock*—All kinds did not do very well, and far too many lean cattle were marketed. *Clip of Wool*—Quality and quantity about the average.

DUMFRIES (Nithsdale). *Wheat*—None grown. *Barley*—None grown. *Oats*—Late in ripening; some not ripe at the end of September; well got except in a few cases where taken in too soon; thrashing lighter than last year. *Harvest*—About three weeks later than usual. *Hay*—A good crop; ryegrass very poorly got; second and third cuts got in fine order. *Meadow Hay*—More productive than last year, and very well got. *Potatoes*—About 3 tons per acre; a little disease. *Turnips*—More failures than successes; no resowing; brairded fairly well. *Weeds*—Impossible to keep down owing to wet weather. *Pastures*—Good, but not the feeding quality of last year. *Live Stock*—Throve fairly well. Cattle and sheep free from disease. *Clip of Wool*—Of fairly good quality, but much lighter than last year.

DUMFRIES (Eskdale). *Wheat*—None grown. *Barley*—None grown. *Oats*—A good crop, except in some cases, where odd fields were very poor; yield, 32 to 35 bushels per acre; did not thrash as well as they looked; straw fairly good quality, but short in bulk; seed sown, Potato oats about 6 bushels per acre and heavier oats about 7 bushels per acre. *Harvest*—Was late in commencing; about a week to a fortnight later than last year. *Hay*—Ryegrass hay was an average crop; not as heavy as last year; about 30 to 32 cwt. per acre; the quality was good, and mostly got in good condition. *Meadow Hay*—Was a nice crop; lighter than last year, except meadows which were late in being cut, and these were heavy; very wet till into September, when the weather improved, and a lot of good hay was got then. *Potatoes*—Crop disappointing, and in most places a very small yield; did not appear to be much disease, but potatoes very small. *Turnips*—A very good crop; brairded well, and came well to the hoe; in only a few cases was second sowing required; with an exceptionally mild winter, turnips kept growing on all the time. *Insects*—Not much damage by insects; less than usual. *Weeds*—Not much injury by weeds, although with so much rain in early summer weeds were difficult to keep down. *Pastures*—Were about an average growth, but the quality was not so good, as there was too much wet. *Live Stock*—Did well on pastures; much better than most expected seeing it was so cold and wet; stock, however, did not put on condition so quickly as usual. Cattle and sheep free from disease; sheep very free from braxy all autumn; a long time since deaths amongst sheep were so light. *Clip of Wool*—Very much under the average.

KIRKCUDBRIGHTSHIRE. *Wheat* — None grown. *Barley* — None grown. *Oats*—A good crop, and well harvested; grain, 17 cwt. per acre; straw, 25 cwt. per acre; grain not quite up to average in weight per bushel. *Harvest*—About usual time. *Hay*—A very heavy crop; over 2 tons per acre for first cutting and 1 ton for second; much better than last year; first cutting protracted in making and considerably damaged; second cutting excellent. *Meadow Hay*—Not equal to last year, but well saved. *Potatoes*—Early varieties an average crop, about 7 tons per acre; no disease; late crops a poor yield, 5½ tons, and disease prevalent; no new varieties. *Turnips*—Crop sound, but much under average; about 16 tons per acre; brairded well and little resowing required, but suffered all through from cold and wet. *Insects*—None. *Weeds*—Annual weeds very troublesome and cultivations difficult and costly. *Pastures*—Extraordinary growth of pastures throughout the season and right up to Christmas; quality deficient. *Live Stock*—Seemed to thrive well. Cattle and sheep free from disease.

WIGTOWNSHIRE. *Wheat*—Very little grown. *Barley*—Very little grown, but where sown the yield was about 40 bushels per acre; seed, 4 bushels per acre. *Oats*—Lea oats, 36 bushels per acre; oats after green crop, 42 bushels per acre; seed, Potato oats, 5½ to 6 bushels where broadcasted, 4 to 5 bushels where drilled; large varieties of oats, 7 to 8 bushels per acre. Where 'Ceresan' was used as a dressing for seed, the braird was strong and healthy and the crop thick. It was ready for harvest at least a week before undressed seed. *Harvest*—Began about the same time as the previous year, and was general by 1st September; those who started early got fine weather, but want of wind for some days on end was a handicap in getting the crop in proper order for stacking. On the later farms a fortnight of rough wet weather was experienced, and stacking was therefore delayed. Owing to want of sunshine a considerable acreage of oats was cut with a shade of green. Lea oats were not as badly laid as in 1930, and sow-out corn stood up pretty well. *Hay*—About 35 cwt. per acre; the summer generally was unfavourable for haymaking, and although the crop would bulk larger than in 1930 the quality was not so good. *Meadow Hay*—Much the same as previous year, but adverse weather for winning it. *Potatoes*—Early potatoes were a light crop when digging started, but improved later to 8 tons per acre; Epicures were mostly planted. Late potatoes were a poorer crop than in the previous year, and there was some disease; 6 tons per acre. *Turnips*—17 to 18 tons per acre; generally speaking the braird was good; some resowing took place, but not to the extent of the previous year; in spite of a poor summer the crop did well, and on most places would be ample for requirements; not so much finger-and-toe disease and less dry-rot. *Insects*—Damage by insects less than usual. *Weeds*—Were difficult to kill in turnip crop owing to wet weather, and redshank grew freely in some fields by harvest; docks and thistles were very prevalent, and the former appear to be increasing. *Pastures*—Average growth and quality, generally speaking, but on light land the growth was above the average. *Live Stock*—Throve very well. Cattle were free from disease; foot-rot among sheep showed little difference from previous year. *Clip of Wool*—Average clip.

GLASGOW DISTRICT.

AYRSHIRE. *Wheat*—42 bushels per acre; 60 lb. per bushel; straw 27 cwt. per acre; seed, 3½ bushels per acre; grain of second quality. *Barley*—35 bushels per acre; 54 lb. per bushel; straw, 25 cwt. per acre; seed, 3½ bushels per acre; grain of second quality. *Oats*—47 bushels per acre; 40 lb. per bushel; straw, 28 cwt. per acre; seed, 5½ to 7 bushels per acre; grain and straw of average quality. *Harvest*—Began about the usual date—towards the end of August; the absence of drying winds made harvesting operations difficult; grain crops were above average in bulk, but did not thrash so well as the bulk indicated. *Hay*—35 to 37 cwt. per acre, with an average amount of clover; much of the crop was secured in poor condition. *Meadow Hay*—45 to 48 cwt. per acre, of secondary quality. *Potatoes*—6 to 7 tons per acre; the crop was attacked by blight early in the season and heavy losses were incurred, especially in the early districts; seed stored in boxes for next season's crop kept badly, and 50 per cent loss was not unusual. *Turnips*—18 tons per acre; little difficulty was experienced in the early stages of the crop, but owing to the wet season the crop in many cases was small; where it was left growing, however, it increased greatly in bulk, and heavy crops were lifted. *Insects*—Did not cause injury to any great extent. *Weeds*—All kinds were difficult to deal with on account of the nature of the season. *Pastures*—Were of average bulk, but stock did not thrive as would have been expected. Cattle and sheep free from disease. *Clip of Wool*—About average.

BUTE. *Wheat*—None grown. *Barley*—None grown. *Oats*—A fairly good crop; some very good crops, but most of them shorter than last year; seed, 6 bushels per acre. *Harvest*—Started a little later than last year; began 31st August and finished 7th September; cutting very easy, as most of the grain was standing; binder did nearly all; finished carting-in 22nd September; a short harvest; some heating on account of being carted-in too early. *Hay*—Only a fair crop; quality very good; quantity about the same as last year, 1½ tons per acre. *Meadow Hay*—Not much grown, but was saved in very good order; less productive than last year. *Potatoes*—Early potatoes were a little later than last year; began digging 19th June; crop not so good as last year; Kerr's Pink (late variety) a very light crop, just about a half crop; plenty potatoes at the shaw, but very small; crop, 5 tons per acre, in many cases less; little disease; no new varieties. *Turnips*—A very irregular crop; in some cases they never got past the singling stage; when they got away they finished a very good crop, growth being good in the back-end; 20 tons per acre, and good quality; weeds difficult to keep down. *Insects*—No injury from insects. *Weeds*—Not much damage by weeds, except where crops were not inclined to grow. *Pastures*—Not so good as last year; stock, however, did all right on them. *Live Stock*—Cattle and sheep free from disease—no epidemic. *Clip of Wool*—About an average, and quality good.

ARRAN. *Wheat*—None grown. *Barley*—None grown. *Oats*—Very good crops, but much damaged by bad weather, and few good samples of oats obtained; yield, about 40 bushels per acre. *Harvest*—Began about the same time as last year. *Hay*—About 30 cwt. per acre and the quality only fair; much of the ryegrass usually harvested for seed was of inferior quality. *Meadow Hay*—About the same as last year. *Potatoes*—Considerably under last year's crop, which was about 7 tons per acre, and there was a much less acreage grown; the new variety, Arran Pilot, is giving great promise. *Turnips*—Poor turnip crop. *Insects*—Not a great deal of damage. *Weeds*—No damage to any extent. *Pastures*—Good in many districts. *Live Stock*—Throve very well, and were in great demand at spring sales for store and calving stock. Cattle and sheep were free from disease. *Clip of Wool*—About the average; poor prices.

LANARKSHIRE (Upper Ward). *Wheat*—Only small quantities grown. *Barley*—Only small quantities grown. *Oats*—50 to 60 bushels per acre; much the same as last year; quality of grain and straw not so good owing to wet season. *Harvest*—Began at usual time; weather was quite good and crops were secured in fair order. *Hay*—40 to 50 cwt. per acre; an excellent crop, and most of it well secured; aftermath moderate. *Meadow Hay*—A good crop, but not well secured. *Potatoes*—4 to 7 tons per acre; a very small crop; disease and blight appeared about last week in August and were very prevalent; only small quantities of new varieties planted. *Turnips*—15 to 30 tons per acre; small crop on some farms and on others an average crop; brairded well, but slow in coming to the hoe; no resowing required. *Insects*—Very little damage done by insects. *Weeds*—Very bad, and very difficult to keep in check owing to wet weather. *Pastures*—Were very good, and lasted well into the back-end, owing to absence of frost. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—Good and of average quality.

LANARKSHIRE (Middle Ward). *Wheat*—30 to 35 bushels per acre; straw quite as abundant as last year, but did not weigh so well; seed—English, 3½ to 4 bushels, and Scotch, 4 to 4½ bushels per acre. *Barley*—None grown. *Oats*—50 to 55 bushels per acre; straw, 25 to 30 cwt. per acre; generally grain and straw good sample; seed, 6 to 7 bushels per acre according to variety. *Harvest*—Began at or about end of August; about a week later than last year. *Hay*—30 to 40 cwt. per acre; quality quite good, but softer than 1930 crop. *Meadow Hay*—Heavier crop than 1930, but also much softer. *Potatoes*—5 to 6 tons per acre, which was about 3 tons less than last year; disease, which was prevalent where potatoes were not sprayed, appeared about the beginning of August; no new varieties grown to any extent. *Turnips*—Yield on heavy soil 10 to 12 tons per acre, on light soil normal; turnips off heavy soil did not keep well in pits; crop brairded well, but suffered from continual wet. *Insects*—No loss from insects or other pests. *Weeds*—Crops suffered damage by weeds; as a result of continual wet weather usual cultivations could not be carried out and annual weeds got the upper hand. *Pastures*—Were below average, due to excessive rain; did not graze well. *Live Stock*—Did not improve as one would expect. Cattle and sheep free from disease. *Clip of Wool*—Quality equal to average, but clip deficient in quantity.

LANARKSHIRE (Lower Ward). *Wheat*—Very little thrashing done at time of reporting; yield not so good as last year; from 30 to 35 bushels per acre; quality soft; straw normal; seed, 3½ bushels English and 4 bushels Scotch per acre. *Barley*—None grown. *Oats*—20 to 25 cwt. per acre; straw, 20 to 25 cwt. per acre; quality of both grain and straw very good; seed sown, from 5 to 6½ bushels per acre. *Harvest*—Began about normal time, third week in August, or ten days later than last year. *Hay*—Ryegrass, 40 to 45 cwt. per acre, being 5 cwt. per acre less than in 1930; quality very variable, but on the whole softer than in previous year, which condition has reduced weight per acre. *Meadow Hay*—Very little grown; crop bulky, but very soft compared with last year. *Potatoes*—6 to 7 tons per acre, approximately 2 tons less than last year; blight prevalent owing to continued wet weather; disease started, where potatoes not sprayed, in the beginning of August; no new varieties grown in any quantity; did not keep well in pits. *Turnips*—Yield on heavy soil 6 to 8 tons per acre, on light soil normal, 20 to 25 tons per acre; quality good on light soil, poor on heavy; brairded all right, but made no progress on heavy soil owing to continued wet weather. *Insects*—No damage. *Weeds*—Caused injury on heavy soil; the usual cultivations could not be undertaken owing to wet weather and weeds got the upper hand; damage above normal. *Pastures*—Grazing poor throughout the whole season, and concentrated feeding had to be resorted to earlier than usual. *Live Stock*—Did not do so well as in 1930, largely due to wet weather. Cattle and sheep free from disease. *Clip of Wool*—Below the average, but few sheep kept.

RENFREWSHIRE. *Wheat*—A good crop; grain about 25 cwt. per acre; straw about 30 cwt. per acre; both of good quality; some damage done to crop by flooding on low lands; crop rather later than usual in ripening; seed, 3 to 4 bushels per acre. *Barley*—None grown. *Oats*—Variable yield; good crop on free land, but some fields on heavier land soured by wet weather; sowing finished at usual time; where crops soured, annual weeds very prevalent; about 22 cwt. per acre; straw about 26 cwt. per acre; seed, 4 to 6 bushels per acre. *Harvest*—Began about the usual time; weather very favourable, and crops easily secured. *Hay*—Good crop, but soft in quality; fairly well secured; about 40 cwt. per acre in good hay districts, and about 30 cwt. per acre on higher lands. *Meadow Hay*—Very little now grown. *Potatoes*—In early districts crops generally poor, with disease very prevalent, especially in British Queens; late and unboxed crops appeared to escape disease much better, with, consequently, better yields; crops very variable; from 4 to 10 tons per acre, depending on locality and time of ripening; annual weeds very prevalent, and hoeing operations carried out under difficulties. *Turnips*—Crop under average, but where left to grow after October much increased owing to mild winter; did not keep too well in pits; not much resowing, but thinning and cleaning operations were much protracted owing to wet summer. *Insects*—Little or no damage reported. *Weeds*—Annual weeds, especially in green crop, very prevalent, and cleaning operations rendered difficult owing to June being such a wet month. *Pastures*—Were good, but feeding quality reduced owing to wet weather; where understocked inclined to be rank. *Live Stock*—Did not thrive too well owing to cold and wet weather. Cattle and sheep healthy, and liver fluke in latter absent, but foot-rot very prevalent. *Clip of Wool*—Under average, and great difficulty in getting dry weather for clipping.

ARGYLLSHIRE (Lochgilphead). *Wheat*—None grown. *Barley*—None grown. *Oats*—A good crop; grain, 24 to 28 bushels per acre; straw, 20 to 25 cwt. per acre; seed, 5 to 6 bushels per acre according to variety. *Harvest*—Commenced a few days earlier than usual and finished in good time. *Hay*—A good crop, but difficult to secure owing to wet weather in July; about 30 cwt. per acre. *Meadow Hay*—Better than last year, and generally well secured. *Potatoes*—A very poor crop, perhaps due to lack of sunshine in June and July; probably not more than 3 to 4 tons per acre; no disease, but potatoes very small in size. *Turnips*—Well up to the average; 20 to 25 tons per acre; crop brairded well, and there was no resowing. *Insects*—Not to any extent. *Weeds*—Were very troublesome and difficult to keep in check owing to wet weather in June and July. *Pastures*—Were rather late in coming away, but lasted out well. *Live Stock*—Throve very well. Cattle and sheep free from disease. A little fluke in sheep, but this disease seems to be getting less prevalent owing to the use of preventive measures. *Clip of Wool*—Rather below average, but of fair quality.

ARGYLLSHIRE (Kintyre). *Wheat*—None grown. *Barley*—Less grown. *Oats*—Average good crops; about 50 bushels per acre, with straw varying widely from 20 to 30 cwt. per acre; crop thrashing barely so well as in preceding year; seed—broadcast, up to 6 bushels per acre; many seedings found too heavy, due in part to the effect of 'Ceresan' treatment upon brairding and tillering energy of the crop. *Harvest*—Rather earlier, generally speaking; harvesting operations effected easily and in record time; earlier crops in some instances stacked rather soon; late crops secured in excellent condition. *Hay*—Ryegrass, 30 to 35 cwt. per acre, and fully as good as in previous year; quality on the whole quite good, but some of the earlier cuts suffered from 'weathering.' *Meadow Hay*—Crops fully heavier than in 1930, at about 2 tons per acre; secured in good condition on most farms. *Potatoes*—Crops distinctly lighter; yields down from preceding year about 2 to 2½ tons per acre; average crop about 5 to 6 tons (ware) per acre; blight disease pretty general—commenced early in the season, mid-July—showing general effect on foliage. *Turnips*—Not much behind previous year's yields generally, but some districts (cold wet land) decidedly inferior; yield therefore varied widely from as low as 10 tons up to 30 tons per acre; average good yields about 25 tons per acre; crop grew extremely well in October; brairding slow and difficult; general progress poor in earlier half of growing season. *Insects*—Not much damage done by insects to crops, but in one or two instances turnip-fly did considerable damage, and one grower had to resow his crop; root maggots apparent on a few root crops; very little grub attack complained of during season. *Weeds*—The poorer turnip and corn crops much retarded by spurry, redshank and sow thistle. *Pastures*—Were slow in commencing growth, but throughout summer and autumn keep was abundant; late autumn and winter pastures extremely rough. *Live Stock*—Throve quite well. Cattle and sheep generally free from disease. *Clip of Wool*—Same as last year.

ARGYLLSHIRE (islands of Islay, Jura and Colonsay). *Wheat*—None grown. *Barley*—None grown. *Oats*—Fully 36 bushels per acre; weight, 38 lb. per bushel. *Harvest*—Began 1st September and ended about 14th October. *Hay*—Quite a good crop; about 2 tons per acre. *Meadow Hay*—More productive than last year; a lot of grass fit for mowing had to be grazed. *Potatoes*—One-third of a crop; about 2 tons ware per acre and lots of chats; hardly worth lifting. *Turnips*—Good crop, and growth continued into December; about 16 tons per acre; one sowing; finger-and-toe showed on one or two farms, although neighbouring farms had excellent crops. *Insects*—No damage. *Weeds*—There was no injury by weeds; in fact crops were freer than usual. *Pastures*—Were very good, continued late in the season and cattle were out till beginning of December. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—Average.

STIRLING DISTRICT.

DUMBARTONSHIRE (Upper). *Wheat*—None grown. *Barley*—None grown. *Oats*—Not quite such a good crop as last year; straw not so bulky and crop did not thrash so well; harvest troublesome; yield about 20 bushels per acre. *Harvest*—Began about the usual time —viz., the last week of August. *Hay*—Was much the same as last year, not a heavy crop; about 1 ton per acre, and got in fairly good order. *Meadow Hay*—A good crop and got in first-class order. *Potatoes*—Much the same as last year, about 6 tons per acre; little disease. *Turnips*—A little better than last year, about 18 tons per acre; crop brairded well; no resowing. *Insects*—No damage by insects. *Weeds*—Were difficult to keep down in the green crop, especially amongst turnips; yarr and redshank were the chief weeds. *Pastures*—Were abundant, but lacked feeding value owing to too much rain. *Live Stock*—Throve slowly till the end of July; after that they did better. Cattle and sheep free from disease. *Clip of Wool*—Rather under the average in weight and quality.

DUMBARTONSHIRE (Lower). *Wheat*—The quantity of both grain and straw was less than last year, and the quality was poor; about 36 bushels per acre, at 58 lb. per bushel; straw, 30 cwt. per acre; seed, 3½ to 4 bushels per acre. *Barley*—Practically none grown. *Oats*—Not a bulky crop, and under average in both grain and straw; this, no doubt, was due to the cold sunless weather during June and

July; 38 bushels per acre at 40 lb. per bushel; straw, 23 cwt. per acre; good harvesting weather secured a good quality of grain and straw. *Harvest*—Was later than usual by about ten days, and was general about the 10th September. *Hay*—Ryegrass and clover hay a bulky crop, and would weigh about 38 cwt. per acre; much of it was damaged by unfavourable weather in July. *Meadow Hay*—Rather better than last year, both in quantity and quality. *Potatoes*—About 5½ to 6 tons per acre, 2 tons per acre less than last year; disease made its appearance in August amongst the early varieties, and affected the keeping qualities of seed, but was not evident in the late varieties; no new varieties were planted. *Turnips*—About 15 tons per acre; less than last year; the quality was much the same as last year and quite sound; the crop brairded exceptionally well, there being plenty of moisture. *Insects*—All crops were singularly free from insect pests, and there was practically no damage from that cause. *Weeds*—The oat crop suffered in many cases from charlock and spurry; spurry was also very prevalent in the turnip crop. *Pastures*—Were very poor during the early summer, but improved during August and September; on the whole, were not so good as last year. *Live Stock*—Made only fair progress on pastures. Apart from a few reports of mastitis among in-calf cows and foot-rot in sheep, stocks were generally very healthy. *Clip of Wool*—The quality of the wool clip was good, but the average weight per fleece was not up to the usual.

STIRLINGSHIRE (West). *Wheat*—None grown. *Barley*—None grown. *Oats*—About 12 cwt. grain and 16 to 18 cwt. straw per acre; crop secured in good order; seed, about 5 bushels per acre, up to 8 bushels of the newer varieties. *Harvest*—Usual time. *Hay*—About the same as last year, 30 to 35 cwt. per acre; mostly secured in good condition. *Meadow Hay*—Good crop. *Potatoes*—Less than last year, 4 to 5 tons per acre; no disease; no new varieties. *Turnips*—Rather less than last year, 15 to 18 tons per acre; quality good; crop brairded well; no resowing required. *Insects*—No damage. *Weeds*—Difficult to keep down owing to wet weather; more numerous than usual. *Pastures*—Grass very plentiful, but perhaps hardly of same feeding value as last year. *Live Stock*—Sheep did barely so well as last year, but cattle did quite well in latter part of season. Some mastitis in dairy cattle. *Clip of Wool*—Average.

STIRLINGSHIRE (East). *Wheat*—About 42 bushels per acre; medium quality; straw, about 20 cwt. per acre. *Barley*—About 32 bushels per acre; fair quality; straw about 18 cwt. per acre. *Oats*—About 48 bushels per acre; good quality; straw, 20 cwt. per acre. *Harvest*—Started about the usual time, and on the whole 'quiet' but good harvest. *Hay*—Very heavy crop; ryegrass and clover badly secured owing to mild wet weather; Timothy hay, which is later, was secured in good order. *Meadow Hay*—Fair crop and well secured. *Potatoes*—Short crop; under an average. *Turnips*—Fair crop, but owing to wet summer crops varied very much. *Insects*—Damage about normal. *Weeds*—Nothing special. *Pastures*—Fairly good. *Live Stock*—Throve fairly well. Cattle and sheep free from disease. *Clip of Wool*—Average clip.

CLACKMANNANSHIRE. *Wheat*—A very thin crop, and did not thrash well; ripened unevenly; 30 to 32 bushels per acre; straw was poor; nearly all the wheat sown was spring wheat; seed, 4 to 5 bushels per acre. *Barley*—30 to 32 bushels per acre; crop fair as regards straw, but too much rain for quality; grain of fair quality; seed, 3 to 4 bushels per acre. *Oats*—Good crop as regards bulk, but did not thrash too well; harvested in good condition, except where late; the colour was good; 30 to 35 bushels per acre; average weight, 41 to 42 lb. per bushel. *Harvest*—Began about the usual time. *Hay*—A big crop, but soft owing to too much rain; 40 to 45 cwt. per acre; colour was not good owing to the weather. *Meadow Hay*—A good crop, but difficult to secure. *Potatoes*—About 3 tons per acre less than last year; Kerr's Pink about 3 to 5 tons per acre; Golden Wonders about 3 tons per acre; quality fair; did not keep too well in the pits; no early varieties planted. *Turnips*—A very poor crop; owing to the wet season there was great difficulty in sowing and also keeping down weeds; brairded slowly; hung a long time after thinning; finger-and-toe prevalent; yield not more than 17 or 18 tons per acre. *Insects*—There was no ' fly ' on turnips owing to the lateness of the sowing. *Weeds*—There were more weeds than usual owing to the rain; redshank and charlock were both bad; the damage was greater than usual. *Pastures*—Were abundant, but the quality was not so good owing to the excessive rain. *Live Stock*—Did not thrive so well; dairy cows were fed on the grass all summer, and feeding cattle were very slow in coming to the butcher. Cattle were free from disease; sheep were subject to fluke in some cases owing to the excessive wet weather. *Clip of Wool*—A fair average.

PERTH DISTRICT.

FIFESHIRE (Middle and Eastern). *Wheat*—Under an average crop of grain; about 32 bushels per acre; very poor quality; straw fairly bulky, from 30 to 35 cwt. per acre; seed, from 3½ to 4 bushels per acre. *Barley*—Also under an average; about 32 bushels per acre; grain fair quality; average yield of straw; seed, from 2½ to 3½ bushels per acre. *Oats*—Brairded well, and suffered less from the cold, wet, sunless summer than the other cereals; yields very irregular according to nature of the soil; from 40 to 56 bushels per acre; straw fairly bulky and of good quality, unless where badly lodged. A good seed-time was followed by a cold, wet, sunless summer, with considerable damage on some farms by flooding in July and August. *Harvest*—Started beginning of September, about ten days later than last year; conditions were favourable, and crops were secured in good condition, generally by the end of the month. *Hay*—Ryegrass a very bulky crop, of poor quality, and secured in bad condition; average from 40 to 50 cwt. per acre; the haymaking season was one of the worst experienced in this area. *Meadow Hay*—Very little grown; with the reduction of arable cultivation on some farms odd fields of rotation grasses are cut for hay after spring grazing; yield variable. *Potatoes*—Yield very variable; on best lands a fair crop, while on cold or wet lands a partial failure; average about 4½ tons per acre, about 3 tons less than last year;

some disease in certain varieties, and did not keep well in the pits; no new varieties grown. *Turnips*—Brairded well; no resowing; growth was retarded during unfavourable summer; with the abnormally fine autumn and early winter months the crop developed into a fair average, of good quality; about 20 tons per acre; fully better than last year. *Insects*—Injury from insect pests less than usual. *Weeds*—Injury from weeds greater than usual in green crops, owing to unfavourable weather for hoeing and horse-work. *Pastures*—Were abundant, but of poor quality. *Live Stock*—Did not make the usual progress owing to bad weather conditions and poor quality of the pastures; with improved autumn conditions wintering stock did well. There were four outbreaks of foot-and-mouth disease on farms in East Fife; a few cases of anthrax and grass sickness, but not so prevalent as in some former years. *Clip of Wool*—Quality and quantity under an average. *Sugar Beet*—Less than 1000 acres grown in Scotland this year, a large proportion being in this area; the season was most unfavourable; average about 5 tons washed beet, with a sugar content of 16 per cent, compared with last year's, 8 tons at 17·7 per cent. With the declining subsidy the crop returns £10 per acre on an average, and is no longer a paying proposition under present costings.

FIFESHIRE (Western District). *Wheat*—Yield of wheat was under the average, 24 to 32 bushels per acre; straw an average crop of fair quality; seed, 4 bushels per acre. *Barley*—Did not yield well, averaging 24 to 30 bushels per acre; the grain, where well secured, was of fair quality; straw was soft and under the average weight; seed, 4 bushels per acre. *Oats*—Were an improved sample compared with last year, but the yield per acre was short, 40 to 48 bushels per acre; straw, where well secured, of good feeding quality, but under average weight; seed, 5 to 6 bushels per acre. *Harvest*—As in the previous year was late in commencing; the crops were not regular in ripening, and much of the crop was cut before the grain was properly filled; the later districts experienced a late harvest; generally speaking harvest was carried through without much trouble. *Hay*—Ryegrass and clover of average quality, yielding 35 to 45 cwt. per acre; owing to wet weather difficulty was experienced in securing some of the crop. *Meadow Hay*—Bulked well, but light in weight. *Potatoes*—Lack of sunshine had an adverse effect on the weight of the potato crop; 4 to 6 tons per acre; disease did not cause so much loss as was expected. *Turnips*—Under an average; owing to continual rain during the early growing season and lack of sunshine, the crop was slow in bulbing; the later-sown seeds brairded without delay; only a few cases of second sowing reported. *Insects*—Free from insect pests. *Weeds*—Annual weeds in green crop caused trouble during summer months; difficulty was experienced in cleaning land. *Pastures*—Abundance of pasture during most of the grazing season. *Live Stock*—The weather was too cold and wet for stock to derive full benefit from the pastures. Cattle and sheep free from disease. *Clip of Wool*—About an average.

PERTHSHIRE (Western). *Wheat*—35 bushels per acre; crop well got; area sown about the same as last year. *Barley*—Acreage sown under average; yield, 32 bushels per acre; straw short;

some heating in stack. *Oats*—On lea a very good crop; well got, but poor yield; 40 bushels per acre; after turnips and potatoes the worst crop for many years; yield, 30 bushels per acre; much of crop damaged by heating in stack. *Harvest*—Started cutting 7th September, ten days later than last year; a good deal of corn cut very green; very little broken weather; finished 5th October; close warm weather caused a lot of heating in the stack. *Hay*—Under average; about 30 cwt. per acre; mostly well got. *Meadow Hay*—A good average crop; 25 cwt. per acre, and mostly well got. *Potatoes*—The worst crop for many years; about 4 tons per acre; on some land a good deal of disease; extra good weather for lifting. *Turnips*—On light land a fair crop, but on heavy land very poor; 15 tons per acre; crop brairded fairly well; a few farms had to resow; far too much rain, and when it cleared up the land got very hard. *Insects*—No damage. *Weeds*—A good many soft weeds, and difficult to clean on account of so much wet. *Pastures*—Plenty of grass, but soft growth. *Live Stock*—Did not thrive so well as last year. Cattle and sheep free from disease, but a good many cases of grass sickness amongst horses. *Clip of Wool*—A fair average clip of wool.

PERTHSHIRE (Eastern). *Wheat*—Rather disappointing crop; very slow in ripening; grain not well filled and thrashed out badly; about 28 bushels per acre; seed, 3 to 4 bushels per acre. *Barley*—A light crop of poor quality; about 32 bushels per acre; seed, 3 to 4 bushels per acre. *Oats*—Very irregular crop; some heavy crops and some very thin and light; grain not well filled and weighed light; about 38 bushels per acre; seed, 4 to 6 bushels per acre. *Harvest*—About a week or ten days later than usual; began about 1st September; the weather was excellent all through, and crops were secured in splendid condition. *Hay*—A good average crop, but much of it damaged by wet weather. *Meadow Hay*—Very little grown. *Potatoes*—A poor crop, about two-thirds of last year's; average yield, 4 to 5 tons per acre; earlies, second earlies and some late varieties were badly diseased. *Turnips*—A few good fields, but mostly a disappointing crop; average yield about 14 tons; finger-and-toe disease was prevalent; in many cases more than one sowing was required. *Insects*—Not more than usual. *Weeds*—Rather more damage than usual on account of the wet season. *Pastures*—Above average all through the year. *Live Stock*—Throve very well. Cattle and sheep free from disease. *Clip of Wool*—Rather under average.

PERTHSHIRE (Central). *Wheat*—About one-third less acreage sown; 44 bushels per acre; secured in very good condition. *Barley*—About one-half less acreage sown; 40 bushels per acre, weighing about 51 lb. per bushel; secured in general in very fine condition. *Oats*—This is the principal cereal crop grown in the central district. On account of the low price—from 16s. to 18s. per quarter—less oats were sown in the spring. The yield on the low-lying farms was good, and was secured in fine condition. On high exposed farms the crop was damaged by the wet weather. *Harvest*—Began about the usual time for wheat and barley, but ten days later for oats, which commenced in the last week of August and finished about the middle of October. *Hay*—On the whole was very good, and got into tramp ricks in fine condition; about 2 tons per acre; on account of the wet and muggy weather the ricks had to be left in the fields for over a month, and in consequence the hay on the outside was damaged. *Meadow Hay*—A fair crop as to quantity, but discoloured by the wet weather. *Potatoes*—From 4 to 8 tons per acre; on some farms the crop was very poor; no disease of any note; a smaller acreage planted. *Turnips*—Yellows, 10 to 12 tons per acre, and swedes 10 to 14 tons per acre; the wet cold weather kept back the growth; resowing had to be carried out on many farms. *Insects*—The grain crop on some farms was partly destroyed by grub and wireworm. *Weeds*—On some farms weeds are on the increase, especially thistles and runches. *Pastures*—Average growth, but the quality of the grass, on account of the cold and wet weather, was inferior. *Live Stock*—Throve only fairly well; too much wet. Cattle and sheep free from disease. *Clip of Wool*—Up to the average, but the price was low.

PERTHSHIRE (Highland). *Wheat*—None grown. *Barley*—Very little grown, only small patches for stock; weight light. *Oats*—Good crop of straw, but few good samples of grain; natural weight about 38 lb. per bushel; generally 6 bushels sown per acre. *Harvest*—Began in the last week of August, somewhat earlier than usual, and was completed in most cases by the end of September. *Hay*—Ryegrass and clover hay a good crop, well secured; 35 cwt. per acre. *Meadow Hay*—A good crop, and well secured. *Potatoes*—Under average crop; good quality and well secured; yield about 5½ tons per acre; new varieties not planted to any extent. *Turnips*—About 15 tons per acre; quality not so good as usual, and finger-and-toe disease evident on many fields; crop brairded well, but a few second sowings required owing to wet weather. *Insects*—Little or no damage. *Weeds*—Not many weeds. *Pastures*—Lasted well throughout the season. *Live Stock*—Throve fairly well. Cattle and sheep free from disease. *Clip of Wool*—Under the average and of fair quality.

FORFARSHIRE (Western). *Wheat*—38 bushels per acre; grain and straw much better than last year; seed, 3 to 4 bushels per acre. *Barley*—38 bushels per acre; grain and straw much better than last year; seed, 3 to 4 bushels per acre. *Oats*—54 bushels per acre; grain a good sample and straw splendid fodder; seed, 4 to 7 bushels per acre according to variety. *Harvest*—Was not early, but all grain secured in good order. *Hay*—About 2 tons per acre, but very little of it secured in good order. *Potatoes*—Yield was considerably short of the average, something like 5½ tons per acre; good quality and very little disease. *Turnips*—There was little resowing of turnips, but the cold wet weather retarded the growth of the plants, and they were hardly an average crop in October—say, 15 tons per acre; they improved a good deal later, however. *Weeds*—Usual show of weeds where crops were deficient. *Pastures*—Plenty of grass throughout the season, but too much rain for quality in the early summer. *Live Stock*—Throve fairly well. Cattle and sheep free from disease. *Clip of Wool*—About the average.

ABERDEEN DISTRICT.

FORFARSHIRE (Eastern). *Wheat*—Middling quality of both grain and straw; too much rain in the early growing season for this cereal; grain, 36 bushels per acre, weighing 60 lb. per bushel; straw, 30 cwt. per acre; seed, 4½ bushels per acre. *Barley*—34 bushels per acre, weighing 52 lb. per bushel; straw, 25 cwt. per acre; indifferent quality of both grain and straw; seed, 3½ bushels per acre. *Oats*—A fine crop; 56 bushels per acre, weighing 42 lb. per bushel; straw, 30 cwt. per acre; too strong to be of best quality; seed, 6 bushels per acre. *Harvest*—Commenced last week in August, and the whole crop well harvested by end of September. *Hay*—A big crop of 2 tons 15 cwt. per acre, but not too well harvested on account of heavy rains. *Meadow Hay*—Less productive. *Potatoes*—Very variable, running from 2½ tons up to 7 tons per acre; not much disease, but fields practically adjoining varied greatly in both quality and quantity. *Turnips*—Very variable, running from 10 to 20 tons per acre; crops brairded well, but fell away during the latter part of the season. *Insects*—None. *Weeds*—None. *Pastures*—More than average growth, but not the usual quality. *Live Stock*—Did not thrive so well as usual, even with abundance of grass, which during the earlier part of the grazing season was never dry. Cattle and sheep free from disease. *Clip of Wool*—Less than average.

KINCARDINESHIRE. *Wheat*—28 to 36 bushels per acre; quality of grain and straw good; 4 bushels per acre sown. *Barley*—24 to 36 bushels per acre; crop very unequal; quality of grain and straw generally good; 4 bushels per acre sown. *Oats*—Thin-skinned varieties, 28 to 52 bushels per acre; thick-skinned, 40 to 64 bushels per acre; crops varied very much, and oats grown on land inclined to be wet were very indifferent; seed, 6 to 8 bushels per acre; 'Ceresan' has been tried with promising results, and more will be used in the coming season. *Harvest*—Began rather earlier than last year, and was completed in average time. *Hay*—Generally a good crop, but owing to wet weather was spoiled in the harvesting; average yield about 50 cwt. per acre. *Meadow Hay*—None grown. *Potatoes*—A very disappointing crop, some varieties being almost a failure; yield varied very much, from 3 to 7 tons per acre, and in a few exceptional cases rather more; quality excellent; a great deal of disease in some of the varieties grown; no new varieties planted. *Turnips*—A better crop than last year, though there was a good deal of disease; with the very open weather in the back-end crops bulked better than seemed likely; yellows averaged 10 to 20 tons per acre, swedes 12 to 25 tons per acre; the crop came well to the hoe, and there was much less resowing than last year. *Insects*—Damage to oats from grub was about normal, being rather less than last year. *Weeds*—Owing to the wet spring and summer were very prevalent and difficult to eradicate. *Pastures*—Very abundant, though the wet summer tended to spoil the quality of the grass. *Live Stock*—Throve well. Cattle and sheep generally free from disease, but an imported infection of foot-and-mouth disease from Ireland gave a good deal of anxiety; it was quickly dealt with. *Clip of Wool*—Rather lighter than usual, but the quality was good.

ABERDEENSHIRE (Buchan). *Wheat*—None grown. *Barley*—About 28 bushels per acre; quality of grain and straw excellent; seed, 3 to 3½ bushels per acre where drill sown, 4 bushels per acre where broadcast. *Oats*—About 30 bushels per acre; grain and straw excellent; seed, 5 to 5½ bushels per acre drilled; 6 to 7 bushels per acre broadcast. *Harvest*—Began a little earlier than usual; all cereals gathered in in good order; weather was good, and harvest short. *Hay*—About 28 cwt. per acre; good quality; an average crop. *Meadow Hay*—None grown. *Potatoes*—About 4 tons per acre; same as last year, but of good quality; disease among early varieties; no new varieties planted. *Turnips*—About 14 tons per acre; an excellent crop in quality and quantity; crop brairded well; no second sowing. *Insects*—No report of injury by insects. *Weeds*—None. *Pastures*—Were of average growth and quality. *Live Stock*—Throve well on pastures. Cattle and sheep free from disease. *Clip of Wool*—An average clip.

ABERDEENSHIRE (Central). *Wheat*—None grown. *Barley*—35 bushels per acre, 1 bushel less than last year; straw, 23 to 24 cwt. per acre, 2 cwt. more than previous year; quality of grain and straw much better than last year; natural bushel weight about 54 lb., 1 lb. better than last year; seed, 3 to 3½ bushels per acre where drilled, 4 bushels per acre where broadcast or sown by hand. *Oats*—37½ bushels per acre, 1½ bushels less than last season; straw, 24 to 25 cwt. per acre, 1 cwt. more than last year; quality of grain and straw much superior to previous year; natural bushel weight 42 lb., 4 lb. per bushel heavier than last year; seed, Potato and all the thin-husked varieties, 5 to 5½ bushels per acre where drilled, 5 to 6 bushels per acre where broadcast or sown by hand; thick-husked varieties, 2 to 3 bushels per acre additional. *Harvest*—Barley commenced about 12th September and finished about 21st September; oats commenced about 16th September and finished, with a few exceptions, about 30th September. *Hay*—28 cwt. per acre, 1 cwt. more than last year; much about same quality as last year, as also was the mixture of ryegrass and clover. *Meadow Hay*—Much the same as last year in quantity and quality. *Potatoes*—4½ tons per acre, 10 cwt. more than previous year; disease was generally reported, but to a less extent than last year; no new varieties were planted; Majestic, Golden Wonder, Kerr's Pink, Arran Chief, as general field crops, were the favourites in this district; tubers were larger and more equal than last year. *Turnips*—12½ tons per acre, 2½ tons more than last year's crop; no second sowing reported; the crop brairded well; finger-and-toe was reported, but not to a large extent. *Insects*—No injury by insects reported. *Weeds*—No injury by weeds, and surface weeds were less than last year. *Pastures*—Were rather better than average quality, and abundant throughout the year. *Live Stock*—Throve satisfactorily. Cattle and sheep were free from disease; swine fever was prevalent in some districts. *Clip of Wool*—Rather more than last year and of better quality.

ABERDEENSHIRE (Strathbogie District). *Wheat*—None grown. *Barley*—The quantity grown appears to grow less every year; there is now very little grown in this area; what crop there was varied from 32 to 40 bushels per acre, weighing 54 to 55 lb. per bushel;

almost universally 4 bushels per acre were sown. *Oats*—There was much less crop destroyed in 1931 than in 1930, and, whilst the yield was less, in spite of the cold dull summer the crop on the whole might be characterised as better; yield 36 to 48 bushels per acre, and the weight 41 to 45 lb. per bushel; straw was specially good, and the quantity almost abundant. *Harvest*—Was not very early, but finished well inside the average time. *Hay*—Not grown in large quantities; market not very good, and mostly grown for home consumption. *Meadow Hay*—None grown. *Potatoes*—Yield was below the average; Kerr's Pink and Golden Wonder the staple crop; no new varieties grown; the quality was above the average. *Turnips*—Crop was very satisfactory, and there was little, if any, resowing; owing to the wet summer, on wet land finger-and-toe was prevalent to some extent. *Insects*—Caused considerably less damage than usual. *Weeds*—The early part of the season was very favourable for cleaning the land, and, generally speaking, weeds did little damage. *Pastures*—Were abundant. *Live Stock*—Throve very well. Cattle and sheep were free from disease. *Clip of Wool*—About the average; wool is mostly blackface, and never varies very much in quality or quantity.

BANFFSHIRE (Lower District). *Wheat*—None grown. *Barley*—35 to 40 bushels per acre, of poor quality; natural weight about 53 to 54 lb. per bushel; seed, 4 bushels per acre. *Oats*—Yield below average; 40 to 48 bushels per acre, but of good quality; straw good; seed, about 5 bushels per acre. *Harvest*—Began at the usual time. *Hay*—Same as last year, about 35 to 40 cwt. per acre. *Meadow Hay*—None grown. *Potatoes*—Less than last year, about 6 tons per acre; no disease; no new varieties planted. *Turnips*—Crop above average; 18 to 20 tons per acre; brairded well; no second sowing. *Insects*—No injury by insects. *Weeds*—No injury by weeds. *Pastures*—Fully above average and of good quality. *Live Stock*—Throve well. Cattle and sheep were free from disease. *Clip of Wool*—Average clip.

BANFFSHIRE (Upper District). *Wheat*—None grown. *Barley*—A vanishing quantity from different causes; distillers for several years have neglected the home crop in favour of foreign barley. Adverse seasons also for several years have caused the home barley to fail to mature. *Oats*—Are now the staple cereal, but the area sown amounts only to a small acreage of the farm, particularly where there is a large sheep-run attached. The amount grown is merely sufficient for oatmeal for the farm kitchen and oats for the horses and straw for the stock. Sowing began in the second week of April, but was prolonged to the middle of May owing to incessant rains. *Harvest*—Was later than usual by about ten days; early-sown fields were fairly ripe, but the later-sown were cut very green, and a great proportion of light grain resulted; fine harvest weather prevailed, and allowed the crop to be secured in good condition. *Hay*—Crop again suffered from early drought; was deficient in clovers. *Meadow Hay*—Meadows are pastured when the sown fields get bare, and are seldom cut for hay. *Potatoes*—Are only planted to supply household needs; Kerr's Pink ranks first in favour. *Turnips*—Were got in seasonably, and came well to the hoe; in general up to an average crop. *Insects*—No damage done. *Weeds*—The turnip break was well prepared before sowing and remained clean throughout, with little trouble. *Pastures*—Were late in coming, and failed rather early. *Live Stock*—Went off the pastures under the average in condition. Cattle and sheep quite free from disease; a few isolated cases of grass sickness among horses. *Clip of Wool*—An average clip, but price very disappointing.

INVERNESS DISTRICT.

MORAYSHIRE. *Wheat*—Grain, 25 cwt. per acre; straw, 40 cwt. per acre; quality good. *Barley*—Grain, 16 cwt. per acre; quality good; weight, 55 lb. per bushel; straw, 20 cwt. per acre. *Oats*—Grain, 12 cwt. per acre; quality good; weight, 42 lb. per bushel; straw, 26 cwt. per acre. *Harvest*—Commenced at usual time, and was one of the shortest on record. *Hay*—Quality was fair; quantity about 31 cwt. per acre. *Meadow Hay*—About the same. *Potatoes*—About 5 tons per acre; less than last year; disease not reported to any great extent; few new varieties grown. *Turnips*—Quality good; crop brairded well; little resowing was necessary; crop variable, depending on land; would be on an average about 18 tons per acre. *Insects*—No injury. *Weeds*—No damage. *Pastures*—Were above the average. *Live Stock*—Although there was abundance of grass, stock did only fairly well. Cattle and sheep were free from disease. *Clip of Wool*—Average.

NAIRNSHIRE. *Wheat*—None grown. *Barley*—About 32 bushels per acre; seed, 4 bushels; straw very plentiful. *Oats*—About 48 bushels per acre; seed, 6 bushels; straw very much in excess of last year's yield. *Harvest*—Began about usual time. *Hay*—Rather better than last year, say 1¼ tons per acre; quality good. *Meadow Hay*—None grown. *Potatoes*—Not so good a yield as last year. *Turnips*—A good yield of yellows, but swedes were very small on many farms; crop brairded quite well, and second sowings not required. *Insects*—No injury. *Weeds*—No injury. *Pastures*—Average. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—About average.

INVERNESS-SHIRE (Inverness). *Wheat*—Very small area grown; yield about 40 bushels per acre; seed, 4 to 5 bushels per acre; straw bulky; quality not too good owing to being lodged. *Barley*—40 bushels per acre; average crop, some of the new varieties being thin at harvest; grain quite a good sample, weighing 54 to 55 lb. per bushel; straw more bulky than last year; about 23 cwt. per acre; seed, 4 to 5 bushels per acre. *Oats*—52 bushels per acre; a good crop except on wet land; average better than last year; straw much better also in weight, 27 cwt. per acre; seed, 6 to 8 bushels per acre. *Harvest*—Began about a week later than usual; the weather was broken to begin with, but later on improved, and the crops were secured in good order, except where badly lodged. *Hay*—Average about 35 cwt. per acre; quality good in most cases. *Meadow Hay*—More productive and, with the good back-end, secured in good condition. *Potatoes*—Very much below last year; from 3 to 4 tons per acre; some disease, which began to show early in August. *Turnips*—A very good crop on some farms; on other farms where the land was wet the crop was a complete failure; brairded well, and very little second sowing. *Insects*—None. *Weeds*—More weeds than last year owing to the wet summer, but did not harm crops to any extent. *Pastures*—Very good all summer, and with the mild and open back-end the pastures kept growing well into winter. *Live Stock*—Throve very well. Cattle and sheep free from disease. *Clip of Wool*—Quality of wool good, but in most cases the clip was lighter.

INVERNESS-SHIRE (Skye). *Wheat*—None grown. *Barley*—None grown. *Oats*—Generally a light crop, but grain was fairly good; the crop was secured in good condition. *Harvest*—Commenced about 4th September; although the weather was fine, the crop ripened very slowly. *Hay*—Fair crop as to bulk, and the quality good; secured in good condition. *Meadow Hay*—Crop was lighter than last year, but still it was a good crop and secured in splendid condition. *Potatoes*—A light crop, below the average, but the quality was very good; no new varieties planted. *Turnips*—A fair crop; heavier and healthier than last year. *Insects*—No appreciable damage. *Weeds*—Are always plentiful owing to the wet climate and the continual cropping of the land, but the damage in 1931 was less than usual, mainly on account of the dry weather. *Pastures*—Quite good, particularly after 1st July. *Live Stock*—Throve well on pastures during the latter part of the season, but lambs were somewhat undersized in August, and ewes were rather late in getting into condition. Generally, there were no great losses in cattle or sheep through disease. *Clip of Wool*—Slightly under average and, like season 1930, was difficult to market.

INVERNESS-SHIRE (Lochaber). *Wheat*—None grown. *Barley*—None grown. *Oats*—Much under the average; crop stood up well, and in most cases was harvested in good order; a number of stacks heated, and had to be taken down, owing to being led too soon for fear of broken weather; seed, from 5 to 6 bushels per acre. *Harvest*—Started beginning of September and finished early in October. *Hay*—Ryegrass and clover under the average; secured in good order by the first week in August. *Meadow Hay*—A good average crop, and all secured in good order by the 20th of September. *Potatoes*—Under the average; quality extra good owing to the fine weather during August and September; there was no disease; mostly Kerr's Pink and Golden Wonders grown in the district; no new varieties planted; kept well in pits. *Turnips*—An average crop; no finger-and-toe, and no second sowing required. *Insects*—No damage done to crops by insects. *Weeds*—Were prevalent during July on account of wet weather. *Pastures*—Were generally good all season. *Live Stock*—Throve well. Cattle and sheep have been free from disease. *Clip of Wool*—About the average.

ROSS-SHIRE (Dingwall and Munlochy). *Wheat*—Very little grown; 34 to 40 bushels per acre; seed, 3 to 4 bushels per acre. *Barley*—Slightly more sown last year; 28 to 32 bushels per acre; seed, 4 bushels per acre; quality of grain and straw average. *Oats*—38 to 72 bushels per acre; seed, 5 to 8 bushels per acre; quality of grain and straw very fine. *Harvest*—Began about seven to ten days later than usual; a very fine dry harvest after the first week, and was almost entirely finished in a month. *Hay*—1¼ to 2½ tons per acre; quality a little below average in most cases, due to wet weather. *Meadow Hay*—None grown. *Potatoes*—2 to 6 tons per acre; a very irregular crop; quality in most varieties good; a good deal of disease; no new varieties planted. *Turnips*—A very good crop on most farms; swedes from 15 to 30 tons per acre, yellows 15 to 31 tons per acre—on one farm up to 40 tons per acre; crop brairded well; no second sowing. *Insects*—No injury to crops by insects. *Weeds*—No injury by weeds. *Pastures*—Quite average growth and quality. *Live Stock*—Did not thrive quite so well during May and June, but throve very well after then. Cattle and sheep free from disease. *Clip of Wool*—About average weight and good quality.

ROSS-SHIRE (Tain, Cromarty and Invergordon). *Wheat*—About 34 bushels per acre, 2 bushels less than last year; quality only fair; straw good; seed, 4 bushels per acre. *Barley*—About 32 bushels per acre; bad crop generally. *Oats*—Thin-skinned—the worst thrashing crop for years; about 43 bushels per acre. *Harvest*—Began a little earlier; a good harvest on the whole, but rather slow. *Hay*—A fair crop, about 1 ton 6 cwt. per acre; quality good to fair. *Meadow Hay*—None grown. *Potatoes*—Half a crop, 3 to 4 tons per acre; some flat fields a failure; blight started early, but tubers were not affected much. *Turnips*—Patchy, but went on improving into late autumn, and on the whole came to a fair crop; yield—swedes, about 26 tons per acre, and yellows 25 tons per acre. *Insects*—No injury, some leaf stripe in oats. *Weeds*—No damage. *Pastures*—Average growth and quality. *Live Stock*—Summered well. Cattle free from disease, but worms of all kinds in sheep caused a lot of harm. *Clip of Wool*—Under average.

SUTHERLANDSHIRE. *Wheat*—None grown. *Barley*—A very good crop, but not much grown owing to the very small market price. *Oats*—A very good crop in all districts, and secured in grand order; the best harvest weather for many a year, especially in late districts, and the price much better than last year. *Harvest*—Much later than usual, but the good weather made up for the lateness. *Hay*—A good crop, and secured in good order in most places. *Meadow Hay*—A splendid crop, very heavy and never secured in better order, especially on the north and west coasts, where meadow hay is mostly grown. *Potatoes*—A poor crop, but not grown very extensively in this county; disease very bad in most places. *Turnips*—A poor crop all over, except inland, where they are not so early sown, and improved very much in October and November, owing to the wonderful mild dry weather. *Insects*—No injury by insects. *Weeds*—Were not very bad, owing to dry weather in June and July. *Pastures*—No grass at all in May and June, especially inland, where pastures took a long time to recover from the bad spring; later on were very good, and even on till December grass was plentiful and very green, as there was no frost to speak of until January. *Live Stock*—Did not thrive to begin with, but improved very much after the lambs were sold; very poor crop of lambs and numbers very much below last year, especially inland and on the north coast; good lambing on some farms on east coast; cattle did very well. Cattle and sheep were free from disease, but death-rate among sheep and lambs was very heavy owing to the bad spring; horses were very free from grass sickness. *Clip of Wool*—Very light and quality fair.

CAITHNESS-SHIRE. *Wheat*—None grown for many years. *Barley*—A small quantity of barley or bere is sown for home use for the feeding of poultry; the idea is firmly held that it favours the production of eggs; it is available before the oats, which take longer in ripening; the straw is not so suitable for fodder as the oat; 4 bushels of seed is expected to yield 30 or more bushels per acre on good soil. *Oats*—Form the main crop for grain and straw; 4 to 6 bushels of seed produce 40 to 60 bushels or more per acre on good soil in a favourable season. *Harvest*—Was general by the end of September; after the cold and wet summer with heavy floods the weather during harvest was very favourable; there were few broken days, and machines could keep going nine hours on end; after being secured in good order the yield was disappointing; a screw which last year threshed 13 quarters this year gave only 9, or 30 per cent less. *Hay*—The cold and want of sunshine was against the hay crop, and 2 tons per acre was a great crop and above the average; the aftermath was fairly good, and clovers, including wild white, gave a verdant green appearance, which continued to the last week of December. *Meadow Hay*—Not a large crop in this county; when left uncut the sheep feed largely on it during the winter months, thus diminishing hand feeding. *Potatoes*—Crop was far from being up to the usual; where the appearance was quite promising the lifting showed that the tubers were small and scarce, even when only slightly affected by disease; Kerr's Pink gives as good a return as any of the new varieties. *Turnips*—Braird was much affected by downpours of rain; in not a few cases they were washed away with the soil and had to be resown; in other instances the battered surface delayed growth; fortunately the weather in harvest and after kept them growing, and in some cases they flowered before the frost checked them. *Insects*—Grub was not very prevalent; it is often noticed that the attacks of leather-jackets are most serious when the season is dry and cold. *Weeds*—Oats after turnips became choked with spurrey, usually spoken of as 'karan' locally; it persisted on to harvest, and undoubtedly accounted for the less yield of grain; thistles, sow thistles and coltsfoot also abounded. *Pastures*—Kept growing; in winter cattle are found to thrive better with a frequent run out; wild white makes a fine mat below the tread of the hoofs. *Live Stock*—Throve well. Cattle and sheep were free from disease; warble-fly is not a trouble so far north; this is thought to be due to the summers being colder; it was once very prevalent. *Clip of Wool*—Quality of wool up to usual; price lamentably down.

ORKNEY. *Wheat*—None grown. *Bere*—Was sown towards the end of April, the seeding being 4 bushels per acre; there was a healthy plant throughout the season; ripening was later than the previous season; cutting commenced in the North Isles during the first week of September, and in mainland districts about a week later; the crop was secured in good order, and yielded a fair average return of 38 bushels per acre, weighing 49 lb. per bushel. *Oats*—Owing to the wet spring no oats were sown in March; most of the crop was put down during the first half of April; the braird was thin on many fields owing to wet weather, but there was not nearly so much grub as in the previous year; the season was showery and cold until the end of July, but August and September were good; yields were very similar to the previous year, but the fodder and grain were of superior quality; grain a fair average yield—38 bushels per acre; straw, 30 cwt.; bushel weight, 42 lb. *Harvest*—Was a fortnight later than last year owing to the backward summer; most of the oat crop was cut in October, but fortunately there was little lodging; with high winds and cool weather the crop was all secured by the middle of November in first-class condition; there was a slight shake, but not serious. *Hay*—Ryegrass came away fairly early and grew a good length, yielding average crops; red clover was not quite so abundant as the previous year, owing to the wet winter and spring; yield of hay, 25 cwt. per acre; it was secured with difficulty on many farms, and suffered some damage from wet. *Meadow Hay*—None grown. *Potatoes*—Were free from disease owing to the dry autumn; the yield was rather above the average, amounting to 7 tons per acre; the chief kinds grown were Kerr's Pink, Arran Victory, Great Scot and Up-to-Date; the acreage of seed potatoes was less than the previous year. *Turnips*—The wet spring and early summer was not favourable to the laying down of turnips, but mild dry weather during August and September made a remarkable difference in the final yield; early sowings did best; yield, 15 tons per acre, being fully up to the average; there was no second sowing needed, and while the braird was slow it was thick enough; finger-and-toe disease was not prevalent to any great extent. *Insects*—There was very little grub reported in oats, and conditions were too wet for the turnip-fly to do any damage. *Weeds*—Clean-land crops suffered from yarr owing to wet conditions at sowing-time; there was no special prevalence of weeds in turnips; runch in oats was fairly prevalent in the North Isles on old black land, as in former years. *Pastures*—Did not make so much growth as usual in the first of the season, but were very good in the latter part, remaining green till December; the amount of back-end grazing was outstanding compared with other years. *Live Stock*—There was a certain amount of scouring in lambs owing to the wet, necessitating frequent changes; cattle did not do specially well in the beginning of the season, but made very good progress from August onwards. Cattle and sheep very free from disease throughout the year; there is no grass sickness in horses, and practically no liver fluke in sheep in Orkney. *Clip of Wool*—Was of good quality and an average clip; owing to the increase of sheep stock during recent years the export of wool from Orkney has increased.

SHETLAND. *Wheat*—None grown. *Bere*—28 bushels per acre; weight per bushel, 50 lb. *Oats*—33 bushels per acre; weight per bushel, 38 lb.; 22 cwt. straw per acre; quality of grain and straw good. *Harvest*—Commenced about the end of September for oats—about three weeks later than last year; crops were secured in very good order. *Hay*—Crop was very good; about 26 cwt. per acre—an increase from last year and quality better; the weather was suitable for haymaking, and it was all secured without rain. *Meadow Hay*—Was also better than last year and good quality. *Potatoes*—Crop was good both for quantity and quality; about 9 to 10 tons per acre were lifted, compared with 4 tons last year. *Turnips*—Crop varied in different districts; in some cases the turnips were a good average crop, and in other parts finger-and-toe disease ruined the crop completely; the average would be from 8 to 9 tons per acre. *Insects*—No damage by insects. *Weeds*—Crops were clear of weeds other than charlock, which is usually very common every season. *Pastures*—Were not so good as last year; June, being a very cold month, gave the grass a setback from which it did not recover until late in the summer. *Live Stock*—Did not thrive so well as in former years, and did not have the condition at the end of the season that might have been expected. Cattle and sheep have been free from disease. *Clip of Wool*—The quality of the wool was much about the usual, but the weight was less.

THE WEATHER OF SCOTLAND IN 1931.

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THIS report consists of (1) a general description of the weather from month to month, and (2) a selection of rainfall returns in which each county of Scotland is represented by one or more stations. It is to be noted that all temperature readings referred to are, unless otherwise stated, from the thermometers exposed in the regulation "Stevenson Screen."

JANUARY.

Rather cold, unsettled and stormy conditions prevailed throughout most of the month, the mean barometric pressure being below the average, and gales not infrequent, being widespread between the 15th and 17th, on the 20th and 26th, and again on the 31st. The stormiest periods were centred around the 16th and 31st, when gales were more or less general over Scotland. On the 16th the wind at Butt of Lewis reached a momentary velocity of 83 miles per hour, and on the 17th at Bell Rock 85 miles per hour. On the 31st at Bell Rock the mean hourly velocity reached 63 miles per hour, and there was a gust of 85 miles per hour, while at Kirkwall on the same day there was one of 73 miles per hour. Between the 5th and 8th, barometer readings were high and the weather typically anticyclonic, being dry, cold and quiet with intense local fogs, particularly in western districts.

In contrast with January 1930, which was mild, both the mean temperature and the mean daily range of temperature were below the average. The first week of the month was very cold, the lowest temperatures being mostly recorded during this period; the mornings of 6th and 7th were perhaps the coldest; the morning of the 30th was, however, also very cold. On the 6th and 7th at Braemar the minimum temperature was 6° F., and on the 30th 11° F. The mildest period centred around the 16th, when the maximum temperature for Cupar was 55° F. Ground frosts were experienced each morning, with the exception of the 11th and 16th. The frosts on several occasions were very intense, particularly in the higher and more exposed regions of the Grampians, where, in the early mornings, there were at times from 20 to 30 degrees of frost. At Braemar on the 7th the temperature on the grass fell to 1° F. In Peeblesshire there were on the 6th and 7th about 20 degrees of frost, and in Renfrewshire on the 30th about 15.

Over western Scotland, particularly in the Western Isles, and over a large area stretching from Loch Tay in central Scotland to the Cheviots, rainfall aggregates were under the average, while elsewhere, with few exceptions, they were above normal. At Achfary, in Sutherlandshire, the total for the month was 14·29 inches, 2·15 of this falling on the 10th. Other large daily falls were 2·76 in. at Garelochhead on the 31st, 2·28 in. at Glenquoich on the 15th, 2·13 in. at Glenbranter on the 31st, and 2·00 in. at Glen Etive on the 16th. The total for Strathpeffer was 6·43 in., this being the wettest January there since at least 1885. Falls of snow, sleet or hail were of frequent occurrence, the most widespread falls of snow being those on the 18th and 31st, the latter fall being the heaviest in northern Scotland for some considerable time. Owing to the low temperatures which prevailed the snow had a tendency to lie, particularly in the central Highlands, being reported lying at Braemar on more than 20 days. The snowstorm of the 31st was accompanied by gales and resulted in much drifting, the roads and railway at Dalwhinnie being blocked with drifts of 4 feet. On the 18th there was a covering of snow 6 inches deep at Kettins and 10 inches at Braemar, while on the 31st the depth was 6 inches at Dumfries and Rankeillour (Fife), 8 to 9 inches at Milnathort, 9 inches at Braemar and 10 inches at Crieff.

Fogs were of frequent occurrence, being reported on 18 different days, on 16 of which the Clyde area was affected ; the most intense were those in and around Glasgow between the 5th and 7th. In eastern and northern Scotland there was practically no fog during the month.

Thunderstorms occurred locally on 16th, 23rd, 24th, 25th, 30th and 31st, those of 16th being confined to the west and north and those of 30th and 31st chiefly to the south-western and northern districts. In spite of the generally stormy weather conditions there was much sunshine, it being at Blackford Hill Observatory, Edinburgh, the sunniest January recorded there ; the excess above the normal in southern and south-eastern districts was almost equivalent to one hour per day, and to about half an hour in the north. Aurora was observed on nights of 11th, 25th and 26th, that of 25th being seen as far south as Inchkeith.

FEBRUARY.

There was again, as in January, rather cold, unsettled and stormy weather, squally westerly winds and wintry precipitation being the chief features during the month. The barometer readings, owing to the prevalence of depressions moving eastwards or north-eastwards near or across the British Isles, fluctuated rapidly and were in the mean well below the average. Gales were very frequent, occurring on 15 days in the Hebrides and 13 in the Shetlands; the most widespread were those centred around the 1st, 6th, 8th, 11th, 20th and 27th. The highest wind gust recorded was that of 87 miles per hour at Butt of Lewis on the evening of the 27th, whilst the next was that of 82 miles per hour at Kirkwall on the following morning.

Apart from a very short mild spell centred about the 25th the month was generally cold, with ground frost reported from some place or another every morning. Although it was cold it was not nearly so cold as the previous February, which, it may be recalled, was in parts one of the coldest Februaries on record. The outstanding feature of the temperatures for the month was the high maxima which occurred on the 25th, particularly in eastern Scotland, it being the warmest day in February for several years; at Aberdeen, the maximum was 59° F., while 56° F. was recorded at many places. On the morning of the 5th the screen temperature at Dalwhinnie went down to 9° F., and the temperature on the grass at the same station on the 23rd to 4° F.

Rainfall in northern and western districts and in parts of the Lothians was above the average, while in areas lying between the upper reaches of the Dee and Don to the Firth of Forth and in the border counties it was subnormal. Amongst the largest daily falls were 2·92 in. at Kinlochquoich on the 12th and 2·48 in. at Corrie (Arran) on the 11th. In western and north-western counties several places experienced rain or snow each day during the month. The most widespread falls of snow occurred between the 1st and 6th, the 11th and 17th and again from 26th to 28th. At Kirkmichael snow fell on 25 days, whilst at Dalwhinnie and Braemar it lay throughout the month. Owing to the boisterous conditions there was at times much drifting, many of the roads being blocked, and locally, particularly between Perth and Inverness, railway services interrupted. At Wolfelee on the 1st there were drifts of 4ft., and on the 16th the snow lay 12 inches deep in the central Highlands.

Thunderstorms occurred on 6 days, those of the 11th being widespread in the west and north. Fog, although reported on 11 different days, was nowhere widespread and was generally of short duration. On the evenings of 13th, 15th, 16th and 25th, aurora was observed, being visible on the 13th as far south as Dumfriesshire.

The duration of bright sunshine varied somewhat, but generally in northern and eastern districts it was above the average, while in the south it was below normal.

MARCH.

In contrast with the previous two months, barometric pressure was generally high and anticyclonic conditions predominated, the weather being on the whole quiet, dry and cold, with a prevalence of easterly winds. Gales did occur on 1st, 6th, 17th and from 29th to 31st, but they were much more local than in either January or February ; at the Observatory, Edinburgh, it was the calmest March since records commenced.

In the opening days of the month some remarkably low temperatures were experienced ; 1° F. was recorded at Braemar on the 3rd and 4° F. at Logie Coldstone on the 3rd and 4th. On the grass the temperature on the morning of the 3rd was 1° F. at Braemar, 0° F. at Dalwhinnie and 1° F. at Balmoral. Ground frosts were reported every day, being very widespread and frequently severe. Day temperatures over 60° F. were noted on 20th and 27th, the highest being 65° F. at Ruthwell on 20th.

Rainfall aggregates were everywhere below the normal, and over large areas it was probably the driest March on record. At Achnashellach there was less than 10 per cent of the normal, whilst over most of the country there was less than 50 per cent. Most of the rain measurements were due to falls of sleet or snow, snow being prevalent during the first fortnight and again towards the end of the month. Between the 1st and 2nd heavy snow fell in northern districts, the depth in the Orkneys being 18 inches ; on the 1st there were drifts 3ft. deep at Arbroath. Other heavy falls occurred locally between the 8th and 14th when, particularly in eastern districts, many roads were blocked. In the Grampian districts snow lay locally on more than 20 days.

Under the anticyclonic conditions fog was rather prevalent, particularly in the Clyde area and in eastern districts. Thunderstorms were reported on 6 days and aurora was observed on 7 nights. Sunshine aggregates were generally above the average.

APRIL.

The frequent passage of depressions across or near the British Isles gave rise to mainly unsettled and at times stormy weather, gales occurring on 8 days, the most widespread being those of 17th.

The mean temperature was above the average, this being due to the relative mildness of the nights as the mean of the day maxima was below the average. The warmest period centred round the 10th, when at many places the temperature went above 60° F., the highest, 65° F., being reached at Cupar on the 10th and at Kirkcaldy and Edinburgh on the 11th. Ground frosts were not infrequent, the coldest morning being perhaps the 6th.

In western Scotland rainfall was generally below the normal, while in the north and east there was an excess which was greatest in the south-east. Although precipitation was below the normal in the west there were many areas with only two rainless days, the daily rainfall amounts being on the whole small. Snow, sleet or hail showers were of frequent occurrence, being reported on as many as 13 days locally, while at Glencoe there was fresh snow on the hills almost every night. There were, however, no heavy falls of snow.

Fog was very frequent, but not widespread nor prolonged, while thunderstorms and aurora were reported each on 8 days, the aurora of 3rd being observed as far south as Dumfriesshire.

Sunshine duration totals were, with the exception of the Orkneys and Western Isles, generally below the average; the 6th, 19th and 28th were very sunny, many places having 11 or more hours' sunshine on one or more of these days; at Tiree the average sunshine for the periods 18th to 20th and 27th to 29th was in the neighbourhood of 13 hours per day.

MAY.

As in April the weather was of a disturbed and unsettled type and at times rather stormy, gales occurring on 5 days, the most widespread being those of 11th.

Mild nights rather than warm days caused the mean temperature to be above the normal. The warmest period lay between the 27th and 29th, when the thermometer soared to 70° F. or over in many districts; on the 27th 75° F. was reached at Ruthwell and Kilmarnock. The coldest nights were recorded during the first 10 days and again between the 18th and 23rd, ground frosts during these periods being common. At Lerwick the highest temperature during the month was only 58° F.

Rainfall was in general above the normal, the greatest excess occurring in central Perthshire and in the Orkneys, the totals in these areas being greater locally than twice the average. More than 1 inch of rain, or over 100 tons per acre of water, fell in many places on one or more days between the 7th and 14th and again on the 28th and 31st, those between the 7th and 14th occurring mostly in northern and western areas and those of 28th and 31st in eastern and southern districts. Snow fell very locally on the 1st, and sleet on 1st, 4th and 30th.

Thunderstorms, frequently associated with heavy rain or hail, occurred on 22 days, the districts most visited being those south of the Caledonian Canal. In the area lying between the Tay in the north and the Tweed in the south, the thunderstorms of 6th, 7th, 23rd and 29th were widespread and severe; on the 29th near Monksfoot, Lanarkshire, several sheep were killed by lightning.

Fog was reported on 5 days, being dense locally on 7th and 31st.

Sunshine totals were generally below the average, the exceptions being mostly confined to south-eastern districts. Edinburgh enjoyed an average of more than one hour per day above the average May figure.

JUNE.

Dull, wet and rather cold weather predominated in June, particularly the first three weeks, an improvement having set in about the 20th. Gales occurred on 4 days and earth tremors were reported on the 6th and 7th.

With the prevalence of cold easterly winds and the absence of any really warm spells the mean temperature was below normal; the difference from normal was not excessive, but this was due to the cloudy night skies. Locally on a few days the temperature reached the 70° level.

Frequent heavy rains caused the rainfall totals, with the exception of perhaps small areas in Aberdeenshire, to be everywhere well above the average, it being the wettest June on record at many places; the wettest areas were the southern, midland and south-eastern counties. During the first three weeks rain fell nearly every day in most districts, and the driest period was centred round the 24th. In the Orkneys and in the extreme north the first 9 days were, however, mainly fine and dry. On the 14th and 15th practically over the whole of Scotland south of the central Highlands, falls of over 100 tons per acre of rain, locally over 200 tons, on one or other of these days, gave rise to widespread damage, much flooding and locally loss of life. Heavy falls of rain, frequently of thundery tpye, occurred locally on other days, but they were not so widespread and general.

Thunderstorms, locally severe, were reported daily between the 6th and 18th, with the exception of the 8th, the areas most affected being eastern and southern counties. The cold inclement nature of the weather is indicated by the fact that fresh falls of snow were noted locally on 2nd, 6th, 7th and 20th on the higher Grampian hills. Fog occurred locally on 10 days.

Apart from the extreme north the sun was not seen during the first 9 days, and for the month as a whole, it was locally the most sunless June for many years.

JULY.

As in the preceding month the weather experienced was of a very unsettled type, being characterised by persistent rainfall, frequent thunder and a remarkable lack of sunshine.

In eastern and central Scotland the warmest day of the month was the 9th, when some really high temperatures were recorded, 79° F. being reached at Stirling and Perth, 78° F. at Cupar, Leuchars and Crieff, and 77° F. at Strathpeffer. In the west the maximum temperature for the month failed locally to go above 65° F., the warmest day there being probably the 15th. Although the day temperatures were on the whole rather low this was somewhat compensated for by the mild cloudy nights; the coldest nights were those around 6th, 20th and 21st.

Only one dry day was experienced at several places, the rainfall generally being well above the average and of a very persistent nature. It was only in small scattered areas, chiefly in the Border counties and the Western Isles, that the rainfall was below the average; the excess was very marked in central Perthshire and Fifeshire. The wettest periods were around the 5th, 15th, 21st, 22nd, 26th and 27th, when over widespread areas heavy falls mostly of the thunderstorm origin were reported. At Cluny Castle on the 15th over 100 tons of water per acre fell in one hour.

Thunderstorms occurred on 14 days, being rather severe and widespread, particularly over central Scotland, on the 6th, 7th, 9th, 14th and 15th, those of 14th being rather destructive and followed by much local flooding.

Sunshine aggregates were everywhere below the normal; at Aberdeen it was the most sunless July since at least 1881, and at Edinburgh since at least 1901.

AUGUST.

Quiet anticyclonic conditions prevailed during the first and last weeks, the intervening period being rather unsettled. There was practically only one warm spell, that between the 3rd and 7th, when the maximum exceeded 70° F. in many places, 81° F. being reached at Onich on the 4th and 80° F. at Achnashellach on the 3rd and 4th, and at Fort William on the latter date. Locally, however, in eastern and northern districts the maximum failed to reach during the month the 70° level. Ground frosts were reported locally on the 9th and again during the last 10 days of the month.

In the Lothians, the south-eastern Border counties, around Balmoral and in the vicinity of Keith, there was an excess of rainfall, this being very pronounced in the Lothians; elsewhere there was a marked deficiency, it being over large areas the driest August on record. At Deerness it was the driest August since at least 1841, whilst in the Shetlands there was less than 10% of the normal. The wettest period lay between the 16th and 21st, heavy falls occurring in the south-eastern counties between the 18th and 21st, these giving rise to much flooding, structural damage and, in a few instances, loss of life.

Thunderstorms occurred on 10 days and were chiefly located in southern Scotland. Gales were absent, but fog was rather prevalent and at times dense locally, particularly during the anticyclonic spell.

In the east there was a deficiency of sunshine, it being in Edinburgh the most sunless August since 1924; on the other hand it was very sunny in the west and north; at Dumfries it was the sunniest August since 1919.

Aurora was observed in Skye on the night of 7th.

SEPTEMBER.

The quiet anticyclonic conditions which set in towards the end of August persisted more of less throughout September; there was, however, much cloud.

The month was rather cool, there being no very warm spells; in eastern districts between the 15th and 18th the thermometer rose to the 70° level, 72° F. being recorded at Arbroath on the 15th; in the west the 1st and 23rd were rather warm; on the former date 70° F. was reached at Oban, but in general the maximum was about 65° F. At Lerwick the highest reached was only 58° F. Ground frosts were reported on 14 nights; the temperature on the grass fell to 20° F. at Dalwhinnie on the 11th, 21st and 22nd.

In the Edinburgh area the rainfall was just about the average, but elsewhere there was a decided deficiency, it being locally the driest September on record. Most of the rainfall was, in general, confined to a few days on which falls were heavy locally.

On five days there were local thunderstorms, chiefly in southern and eastern districts; the winds in these districts approached gale force on 2nd, 4th and 30th. Fresh snow fell on the Cairngorms on the 3rd and 6th and near Braemar on the 6th and 11th. With the prevalence of quiet conditions fog was rather frequent, being reported on 13 days, the areas most affected lying between the Forth and Clyde.

During the first fortnight many places had one or more days with over 10 hours' sunshine, but nevertheless sunshine aggregates were generally below the average. It was at Eskdalemuir the most sunless September since records commenced in 1910. At Tiree, where there were 85 hours of bright sunshine during the first 12 days, the total for the month was only 115 hours.

Aurora was observed on 8 nights, that of 21st being visible as far south as Leuchars.

OCTOBER.

The weather experienced in eastern Scotland was mainly dry and sunny, whilst in the west, particularly in parts of Inverness, Argyll, Dumbarton and Renfrew, heavy and persistent rainfalls were rather frequent. In general, with the exception of these wet areas, it was a pleasant, dry, sunny autumn month. There were gales reported on 15 days, the highest velocity in a gust being that of 82 m.p.h. at Lerwick on the 20th.

The month opened rather mild and closed rather cold; 70° F. was reached at Stonehaven on the 4th and 5th and at Aberdeen on the 4th.

Although there were few days quite free from rain, the rainfall totals over most of Scotland were below the average; locally in the west and north there was only one dry day. At Kinlochquoich over an inch of rain, or more than 100 tons per acre, fell on 9 different days, on one of which there were 3 inches, whilst the total from the 1st to 8th was 11·20 inches. At Perth it was the driest October since 1919 and at Marchmont since 1904. The areas with excess of rainfall lay mainly to the west of the Grampians, from Inverness-shire to the Clyde estuary. The driest areas were in eastern coastal districts, the deficiency being greatest in the Tay Estuary.

Thunderstorms occurred locally on a few days at the beginning of the month, while snow, sleet or hail was noted on 2nd, 7th and each day from 20th to 31st, the snow during the last ten days being most frequently reported from eastern and northern areas. From the 24th the snow tended to lie locally, particularly in and around Balmoral. There was fog on 12 days and aurora was observed on 12 or more nights.

Sunshine duration totals, except in extreme western and northern districts, were well above the normal, it being the sunniest October on record at St Andrews, Edinburgh, Inchkeith and Eskdalemuir. In Edinburgh it was the sunniest month since the previous May.

NOVEMBER.

Mild unsettled weather with frequent winds of gale force predominated, this being due to the frequency of depressions moving across the British Isles. On the 18th at Butt of Lewis the wind gusted to 83 miles per hour.

As in October the opening days of the month were very mild, the maximum reaching almost 60° F. in all districts. During the remainder of the month, apart from one or two short cold snaps, temperatures continued rather high for the season.

In the north, rainfall totals were much below normal, particularly in Caithness and Sutherland, while south of a line extending from Skye to Aberdeenshire they were greatly in excess, the excess being very pronounced around the Tay Estuary and in south-western counties. At Rothesay it was the wettest November since 1800, at Colmonell since 1876, and at Arbroath since 1866, where it was, however, equalled in 1888. Another prominent feature of the rainfall was the frequency of very heavy falls and the absence of dry days, both contributing to the flooding which occurred in many areas. Many places had only one or two dry days and these were mostly the 15th or 16th. In the south-west there were several places that had 5 or more days with over an inch of rain on each day. The heaviest falls were perhaps registered during the first three days; on the 2nd 2·60 in. fell at Ardgour and 2·61 in. at Kinlochquoich, while 2·51 in. fell at Eskdalemuir on the 3rd. Snow or sleet was seldom reported, only slight falls occurring around the cold snaps of 21st and 24th, and these chiefly in the Grampians.

Thunderstorms occurred only on two days, but fog, despite the rather stormy conditions, was reported on 23 days, being dense locally on 13th, 16th, 19th and 30th. Aurora was observed on 9 nights.

The amount of bright sunshine experienced was just about normal in all districts.

DECEMBER.

December resembled November, being very mild, but it was rather dull and dry in the east and south and very wet in the west and north-west. It was very stormy at times, the gales being very severe locally, particularly along the north-west seaboard. The most widespread gales were those around the 3rd, 25th and 27th. The highest wind reported was that of a gust of 87 miles per hour at Lerwick on the 23rd; gusts of 80 miles per hour occurred at Kirkwall on 27th and at Butt of Lewis on 27th and 28th.

Apart from short cold spells about the middle and end of the month, temperatures were high for the time of year; on the 24th the thermometer registered 61° F. at Aberdeen, this being the highest for December since at least 1871; on the same day 60° F. was reached at Craibstone and Gordon Castle. Ground frosts occurred on all mornings but four, the most intense being perhaps those of 31st when the grass minimum at Renfrew registered 12° F. and that at Dalwhinnie and Balmoral 13° F.

Over central, eastern and southern areas, together with parts of Caithness and Sutherland, rainfall totals were below normal, the deficiency being greatest along the east coast from Aberdeen to the Border district, large areas in this section having less than 30 per cent of the average; along the western seaboard and in the Orkneys and Shetlands the aggregates were above the average. In the east many places had a total of less than half an inch, while in the west totals locally exceeded 20 inches, days with more than an inch being not infrequent, Kinlochquoich having itself 8, the wettest being 3·24 in. on 2nd. At Marchmont, apart from December 1926, it was the driest December since 1868.

Thunderstorms occurred locally on 9 days and fog on 10 days, being dense locally on 20th and 21st. Snow or sleet showers were reported between 5th and 9th; on 15th, and again during the last week, the snow lay 6 inches deep at Balmoral on 30th and 7 inches at Achnashellach on the 31st. In southern districts there was a deficiency of sunshine, but in the north and north-east there was a little more than the average. Aurora was observed on at least 9 nights.

General Note.

Perhaps the most notable features of the year 1931 were (1) the coldness of the opening months, more particularly March; (2) the mildness of the closing 2 months, particularly December; (3) the excessive wetness and dulness of the summer months, coupled with the prevalence of thunderstorms and frequency of widespread floods; (4) the amount of bright sunshine enjoyed in January and October, the weather conditions in the former month being very stormy; (5) the slight difference from the annual average in both the rainfall and pressure in a year providing so many extremes; (6) the decided deficiency of sunshine taking the year as a whole.

RAINFALL RECORDS FOR 1931, IN INCHES.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Shetland—Lerwick	4·70	7·12	·77	3·09	2·75	2·49	3·87	·21	1·11	4·12	5·86	6·34	42·42
Orkney—Kirkwall	5·17	4·27	2·62	1·91	3·58	2·88	3·70	·56	1·09	4·60	3·16	5·67	37·71
Caithness—Wick	3·13	2·91	1·17	1·82	4·91	2·87	2·93	1·07	·94	2·93	2·64	2·80	30·12
Sutherland—Tongue	6·61	4·65	2·10	2·51	3·71	3·07	3·51	1·08	1·78	3·61	2·04	4·41	39·08
Lairg	6·52	5·40	1·78	2·69	2·95	3·48	3·57	1·22	1·08	4·00	2·14	5·99	40·97
Ross and Cromarty—													
Fortrose	3·07	1·98	1·18	1·94	2·25	3·09	2·58	1·49	1·11	2·24	1·54	1·73	24·10
Ardross Castle	5·64	4·37	1·58	3·32	2·99	3·85	4·03	2·18	1·50	2·67	3·12	4·30	39·55
Lochcarron	13·47	9·69	·71	4·42	4·17	6·93	5·43	2·52	1·80	7·18	6·87	12·74	75·93
Stornoway	7·64	6·97	1·53	3·35	3·68	3·16	2·07	1·38	1·66	5·00	4·88	5·69	47·01
Inverness—Kingussie	2·93	2·67	·90	1·78	2·98	2·97	4·62	1·51	1·10	2·99	3·94	3·67	32·01
Inverness	3·08	2·26	1·01	1·98	2·68	3·44	4·92	1·74	1·20	1·85	1·66	2·04	27·86
Fort-William	7·43	7·33	·81	3·11	6·27	6·10	5·11	3·31	1·58	9·51	11·01	11·33	72·90
Glenquoich	13·23	10·96	1·14	4·75	8·22	8·89	9·54	2·74	2·63	13·72	11·96	21·62	109·40
Portree	9·60	8·59	1·67	4·24	4·60	5·08	4·91	1·97	1·38	7·45	9·31	8·72	67·52
Nairn—Nairn	3·14	1·86	1·37	1·56	2·48	3·16	4·41	1·98	1·27	2·06	1·47	1·07	25·83
Moray—Gordon Castle	2·70	2·41	1·05	1·92	2·58	2·44	4·06	2·42	1·68	2·67	2·28	1·74	27·90
Grantown	3·88	2·11	1·31	2·27	4·02	2·64	5·53	2·84	1·69	·99	2·24	1·57	31·09
Banff—Banff	2·91	2·63	1·04	1·39	2·57	1·90	2·88	1·76	1·06	1·73	2·85	2·15	24·87
Aberdeen—Fyvie Castle	3·53	3·33	1·37	2·06	2·63	3·94	3·24	2·74	1·78	1·79	3·45	1·77	31·63
Peterhead	3·82	2·51	1·34	1·68	3·65	2·06	3·06	2·45	1·30	1·88	3·90	2·27	29·92
Aberdeen (King's Coll.)	3·06	2·80	1·14	1·54	4·59	2·98	2·93	1·87	·89	1·53	4·39	1·39	29·11
Balmoral	3·29	1·39	1·33	3·17	3·16	3·02	3·76	3·82	1·56	2·29	5·19	2·76	34·74
Kincardine—													
Balmakewan	1·99	3·81	1·09	2·19	3·08	4·13	4·16	1·91	1·37	·99	6·09	1·48	32·29
Angus—													
Montrose (Asylum)	3·36	1·86	1·21	2·22	2·86	4·17	4·44	2·04	1·74	·83	5·98	1·03	31·74
Dundee (E. Necropolis)	2·94	1·35	·95	2·13	3·42	4·50	4·95	3·39	1·04	1·21	4·82	·92	31·62
Glamis Castle	4·14	1·63	1·35	2·15	4·35	5·07	3·43	4·18	1·16	1·07	6·37	1·66	36·56
Brechin	3·71	1·87	1·53	2·01	3·66	5·61	4·54	2·24	1·55	·93	6·34	1·28	35·27
Perth—Blair Castle	3·47	2·63	·89	1·54	4·32	4·32	5·65	1·09	1·27	2·29	6·40	2·84	36·71
Crieff	3·47	1·86	1·22	2·39	4·74	7·16	4·82	1·68	1·39	1·75	8·66	2·79	41·93
Perth	2·50	2·09	1·19	2·16	3·20	4·48	3·97	2·41	1·27	·83	5·33	1·26	30·69
Fife—Cupar	3·85	1·72	1·16	1·93	3·26	4·22	5·78	2·40	1·33	1·01	6·68	·71	34·05
Kirkcaldy	2·04	1·83	1·18	1·98	3·24	4·87	5·22	2·29	1·72	1·32	6·08	1·03	32 80
Kinross—Loch Leven	1·88	1·70	1·17	2·33	3·63	4·76	5·27	2·83	1·59	2·00	6·21	1·58	34·95
Clackmannan—													
Tillicoultry	3·31	2·92	1·13	2·43	3·36	6·11	5·57	1·81	1·40	2·81	6·78	1·94	39·57
Argyll—Gruline (Mull)	9·90	7·71	1·61	3·64	6·38	5·70	5·24	1·79	4·09	6·74	15·21	8·67	76·77
Oban	5·72	5·22	1·21	2·19	3·23	4·09	4·11	1·65	1·85	5·84	8·60	6·61	49·72
Glenorchy Manse	11·11	9·08	1·40	3·93	3·88	7·60	7·70	1·49	2·37	6·90	9·92	12·34	77·72
Inveraray	8·45	9·57	1·65	4·11	6·32	7·02	5·97	1·65	2·19	9·12	10·29	11·02	77·36
Campbeltown	7·95	4·15	2·63	1·93	3·12	5·77	4·29	2·41	2·34	3·72	9·95	5·15	53·46
Bute—Rothesay	7·49	6·59	1·82	2·81	4·97	6·39	6·60	2·69	2·51	5·72	10·46	6·77	64·82
Stirling—Stirling	3·56	2·80	1·08	2·01	4·24	5·79	4·84	2·01	1·06	2·44	8·44	2·94	41·21
Dumbarton—Arrochar	10·53	9·43	1·85	4·29	7·60	8·38	6·41	3·31	3·28	8·48	14·58	12·28	90·42
Helensburgh	5·77	5·10	1·46	2·46	4·77	6·18	3·16	2·05	1·23	4·21	7·01	5·39	48·79
Renfrew—Greenock	6·62	6·09	1·76	2·32	5·83	7·01	4·40	1·88	1·64	6·78	8·97	7·70	61·00
Paisley	4·29	3·77	1·21	1·76	4·36	4·91	3·85	2·15	1·21	3·17	7·35	4·54	42·57
Ayr—Kilmarnock	4·50	3·78	1·12	1·87	2·73	5·60	4·30	1·47	1·33	3·58	6·80	4·58	41·66
Ayr	3·74	5·10	·87	1·19	2·28	6·45	5·52	1·32	1·19	3·59	6·75	4·52	42·58
Muirkirk	7·24	5·61	·95	1·90	3·71	6·64	5·17	2·10	1·49	5·18	7·46	7·03	54·48
Pinmore	8·22	4·74	1·26	2·22	2·17	4·26	3·46	2·32	1·73	3·97	10·77	5·36	50·48
Lanark—													
Glasgow (University)	3·17	3·08	1·09	1·42	4·14	4·54	3·41	2·00	1·06	2·73	6·18	3·07	35·89
Biggar	2·21	2·51	·82	1·81	2·62	5·17	4·12	3·67	·85	2·89	4·57	3·10	34·34
Lesmahagow	2·55	2·97	·90	1·94	3·11	5·13	4·44	1·91	1·04	3·21	5·95	4·03	37·18
Linlithgow—													
Bangour	2·06	2·04	1·30	2·41	3·16	5·00	5·17	3·98	1·57	2·57	3·92	1·90	35·08
Mid-Lothian—													
Edinburgh (University)	1·78	1·30	1·57	2·16	2·67	4·25	3·41	5·60	1·56	1·37	4·26	·93	30·86
Gorebridge	1·85	1·72	1·25	2·22	2·65	4·40	3·92	6·46	1·60	1·34	3·38	1·33	32·12
Oxenfoord Castle	2·17	1·73	1·19	2·28	2·44	5·12	3·85	8·24	1·56	1·38	3·58	1·11	34·65
Haddington—													
North Berwick	2·10	1·64	1·13	1·38	3·02	3·98	3·93	4·15	1·16	1·69	3·35	·46	27·99
Stobshiels Reservoir	2·65	2·13	2·70	3·76	2·02	4·27	5·57	7·82	2·11	1·52	1·82	1·18	37·55
Berwick—Duns Castle	2·77	1·93	1·42	3·22	3·62	4·66	3·92	4·35	2·06	1·51	3·80	·84	34·10
Coldstream (The Hirsel)	1·32	1·48	1·21	1·76	1·35	4·71	3·87	2·25	1·36	1·94	2·26	·36	23·86
Peebles—West Linton	2·78	3·80	1·16	2·71	3·64	5·94	4·22	4·28	1·34	2·82	4·44	2·87	40·00
Selkirk—Galashiels	2·80	2·77	1·02	3·06	3·30	5·46	2·84	4·37	1·00	1·64	5·87	1·71	35·34
Roxburgh—Branxholme	2·52	2·40	1·00	2·63	3·43	5·68	3·71	3·81	1·79	2·89	6·11	2·39	38·36
Kelso (Broomlands)	1·53	1·48	·99	2·16	2·50	4·68	3·24	3·34	1·34	1·30	3·18	·55	26·29
Dumfries—Dumfries	4·20	2·47	·83	1·73	3·41	6·14	4·50	2·40	1·49	2·32	8·38	3·56	41·43
Carnsalloch	3·96	3·36	1·07	1·87	4·62	5·93	5·20	2·40	1·49	2·36	8·65	3·50	44·41
Langholm	5·04	4·00	1·57	2·91	4·54	8·01	6·10	2·65	2·52	5·39	10·15	5·48	58·36
Eskdalemuir	5·06	5·98	1·12	3·14	4·59	10·25	5·74	1·80	1·46	5·34	11·22	5·29	60·99
Kirkcudbright—													
Dalbeattie (Kirkonnan)	5·14	3·89	1·24	1·85	4·45	6·90	5·12	3·23	·77	3·91	10·05	4·86	51·41
Carsphairn (Shiel)	10·07	7·61	1·82	3·53	5·33	8·89	6·79	2·80	2·19	5·51	17·44	8·12	80·10
Auchencairn	5·68	3·94	1·14	2·14	3·66	6·15	5·36	3·14	1·43	4·24	7·53	5·89	50·30
Wigtown—Monreith	4·22	2·79	1·01	1·92	2·24	5·31	3·61	3·74	3·60	2·97	8·77	4·55	44·73

AGRICULTURAL STATISTICS.—RETURNED UPON 4TH JUNE 1931—(*Compiled from the Government Returns*)

TABLE No. 1.—ACREAGE UNDER CROPS AND GRASS IN EACH COUNTY OF SCOTLAND.

COUNTIES.	Total Acreage under Crops and Grass.	Arable Land.	Permanent Grass.	CORN CROPS.								Potatoes.	Turnips and Swedes.	Mangolds.	Sugar Beet.	Cabbage.	Rape	Vetches or Tares (Seed).	Vetches, Tares, Beans, Mashlum, &c. (Fodder).	Small Fruit.	Rye-grasses and other Rotation Grasses and Clover.	Other Crops.	Bare Fallow.
				Wheat.	Barley, including Bere.	Oats.	Mixed Grain.	Rye.	Beans.	Peas.	Total.												
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres	Acres.	Acres.	Acres.	Acres.	Acres,
1. Aberdeen	620,911	570,543	50,368	..	9,306	169,853	8	25	3	36	179,231	6,968	75,410	3	2	185	123	3	2,240	234	305,557	313	274
2. Angus	243,533	211,305	32,228	10,889	9,053	53,352	117	204	51	15	73,681	17,168	28,097	12	68	225	247	1	523	1,367	89,594	200	122
3. Argyll	115,359	50,486	64,873	1	609	14,118	50	300	4	2	15,084	2,452	4,546	6	..	35	140	..	81	17	27,771	26	328
4. Ayr	305,146	125,699	179,447	710	17	33,517	14	2	138	18	34,416	7,572	6,539	197	..	248	588	..	701	211	74,835	248	144
5. Banff	156,322	142,077	14,245	..	5,276	42,077	4	18	31	13	47,419	1,602	18,081	2	5	11	118	21	569	18	74,124	23	89
6. Berwick	188,205	120,504	67,701	1,435	8,743	24,284	37	19	232	..	34,750	1,989	17,775	101	22	38	1,148	1	287	28	64,289	20	56
7. Bute	25,768	14,440	11,328	..	7	4,184	..	21	1	3	4,216	908	1,105	5	..	11	59	..	15	7	7,936	27	151
8. Caithness	103,622	78,333	25,289	..	348	25,175	..	9	..	..	25,532	988	9,613	..	..	12	7	1	185	2	41,813	53	127
9. Clackmannan	15,181	6,976	8,205	151	51	2,514	..	..	217	..	2,933	304	670	..	..	12	49	5	150	80	2,696	1	76
10. Dumfries	241,563	117,349	124,214	46	42	31,981	..	3	..	2	32,074	2,732	13,593	138	1	75	602	..	112	50	67,720	129	123
11. Dunbarton	44,788	19,555	25,233	288	2	5,614	4	..	..	..	5,908	1,956	1,276	10	..	64	147	..	92	104	9,838	44	122
12. East Lothian	108,409	79,896	28,513	5,003	10,666	13,612	2	..	42	193	29,518	7,584	11,488	345	18	956	470	14	275	266	28,053	720	189
13. Fife	237,604	153,408	84,196	10,898	8,552	37,714	125	518	516	18	58,341	14,959	18,611	30	731	151	650	4	529	313	58,368	166	555
14. Inverness	149,038	82,015	67,053	25	3,042	27,263	1,422	1,169	..	3	32,924	4,467	8,072	..	..	106	50	..	143	12	35,425	57	759
15. Kincardine	116,866	104,586	12,230	1,034	4,609	30,081	1	1	13	1	35,740	3,558	14,355	..	..	18	116	..	372	71	50,239	70	47
16. Kinross	31,919	19,263	12,676	192	69	5,834	..	31	..	..	6,126	1,021	2,197	..	..	7	81	..	53	8	9,749	3	18
17. Kirkcudbright	179,547	78,541	101,006	41	44	18,245	..	32	10	3	18,375	1,185	8,254	38	..	74	948	..	74	50	49,284	82	177
18. Lanark	238,172	117,057	121,115	1,668	50	32,548	6	7	..	24	34,303	5,502	8,967	18	..	452	993	4	414	1,432	64,036	585	401
19. Mid-Lothian	115,656	70,232	45,424	4,631	2,974	18,013	29	6	4	59	25,716	5,550	8,778	20	13	428	720	..	198	178	28,124	447	60
20. Moray	96,498	87,881	8,617	642	6,916	23,132	77	209	27	4	31,007	1,525	12,482	11	17	43	55	8	462	17	42,128	41	85
21. Nairn	25,106	22,529	2,577	..	1,687	6,028	..	11	..	..	7,726	242	3,579	..	..	4	18	..	66	1	10,856	10	27
22. Orkney	107,697	91,359	16,338	..	2,755	29,219	1	8	..	2	31,985	1,914	12,285	..	..	10	..	..	146	..	44,911	15	93
23. Peebles	51,084	20,641	30,443	4	92	4,982	..	10	..	1	5,089	260	2,515	2	..	29	482	..	70	32	12,135	13	14
24. Perth	318,341	206,013	112,828	6,491	1,418	57,736	93	360	720	7	66,825	15,690	21,599	4	78	154	785	3	804	3,283	95,897	167	724
25. Renfrew	78,983	28,940	50,043	1,287	26	7,749	4	..	16	2	9,084	2,764	1,846	11	..	115	158	..	37	102	14,531	153	139
26. Ross & Cromarty	137,608	106,268	31,340	568	4,793	31,522	25	144	3	2	37,057	6,537	12,865	4	..	246	74	36	396	17	48,609	48	379
27. Roxburgh	173,570	105,984	67,586	859	4,720	20,903	8	..	21	3	26,514	1,103	14,620	37	..	49	614	3	279	31	62,652	28	54
28. Selkirk	29,939	13,332	16,607	5	31	3,073	..	..	..	1	3,110	115	1,738	2	..	8	96	1	6	5	8,244	3	4
29. Stirling	110,309	46,574	63,735	1,171	175	15,019	11	13	1,159	4	17,552	2,970	3,231	2	..	68	467	3	692	171	20,806	48	564
30. Sutherland	30,712	20,635	10,077	..	158	6,381	..	1	..	3	6,543	944	2,384	2	..	5	38	..	29	1	10,540	2	147
31. West Lothian	53,728	30,121	23,607	1,985	1,138	9,374	3	..	31	1	12,532	2,235	2,986	12	..	40	456	..	146	51	11,534	31	98
32. Wigtown	153,836	96,684	57,152	..	51	23,706	1	41	72	..	23,871	1,429	10,758	194	..	27	257	..	193	8	59,791	119	37
33. Zetland	27,180	12,704	14,476	..	480	5,884	2	..	..	..	6,366	1,915	1,013	..	..	585	..	..	10	..	2,293	4	518
Total	4,632,200	3,051,930	1,580,270	50,024	97,900	334,687	2,044	3162	3311	420	981,548	128,102	361,328	1206	955	4491	10.756	108	10,349	8162	1,534,378	3846	6701

TABLE No. 2.—TOTAL PRODUCE OF WHEAT AND BARLEY, ACREAGE and YIELD per Acre in the Year 1931, compared with the YIELD for the Year 1930, and the AVERAGE of the Ten Years, 1921-1930, in each COUNTY of SCOTLAND.

COUNTIES.	WHEAT.								BARLEY, INCLUDING BERE.							
	Total Produce in 1931.		Acreage in 1931.	Yield per acre.				Average of the Ten Years, 1921-1930.	Total Produce in 1931.		Acreage in 1931.	Yield per acre.				Average of the Ten Years, 1921-1930.
				1931.		1930.						1931.		1930.		
	Qrs.	Tons.	Acres.	Bush.	Cwt.	Bush.	Cwt.	Bush.	Qrs.	Tons.	Acres.	Bush.	Cwt.	Bush.	Cwt.	Bush.
Aberdeen	..	..	..	..	..	30.0	16.1	30.7	39,000	7,500	9,306	33.4	16.2	32.0	15.0	32.3
Angus	46,000	10,000	10,889	33.4	18.6	35.6	19.1	35.9	40,000	7,700	9,053	35.2	17.0	38.2	18.0	36.5
Argyll	4	1	1	32.0	11.4	38.0	19.7	..	2,500	460	609	32.4	15.1	34.0	15.8	33.8
Ayr	3,900	850	710	44.4	23.9	46.0	25.3	45.5	80	15	17	35.7	17.1	38.3	19.0	36.3
Banff	..	..	..	..	..	32.0	17.1	‡29.6	25,000	4,800	5,276	37.6	18.2	37.9	18.2	39.2
Berwick	5,600	1,200	1,435	31.2	16.6	36.3	19.8	39.1	35,000	6,400	8,743	31.8	14.5	35.5	16.2	35.1
Bute	..	..	..	..	..	39.0	20.6	*34.1	30	6	7	38.4	17.2	39.6	17.7	39.4
Caithness	..	..	..	..	..	..	..	..	1,500	270	348	34.9	15.3	36.4	16.4	36.5
Clackmannan	820	180	151	43.7	24.4	43.5	24.3	39.9	270	50	51	42.6	20.9	40.0	19.6	37.6
Dumfries	210	50	46	37.0	20.1	41.9	22.1	38.7	180	30	42	34.3	15.3	36.9	17.3	37.3
Dunbarton	1,470	300	288	40.8	21.1	44.1	23.5	37.3	6	1	2	24.0	10.7	24.4	11.4	29.8
East Lothian	24,000	5,200	5,003	38.7	20.8	45.3	24.3	44.3	55,000	11,000	10,666	41.5	19.9	45.4	21.6	46.1
Fife	44,000	9,500	10,898	32.5	17.5	36.0	19.4	36.4	37,000	6,800	8,552	34.6	16.0	39.5	18.7	39.5
Inverness	110	20	25	36.0	19.9	39.5	21.2	*39.3	11,000	2,000	3,042	28.9	13.5	27.7	12.9	26.7
Kincardine	4,200	900	1,034	32.7	17.5	38.3	21.1	36.6	18,000	3,300	4,609	31.2	14.3	36.1	17.2	36.5
Kinross	930	210	192	38.6	21.5	38.5	21.4	37.5	340	70	69	39.6	19.7	36.0	17.4	34.4
Kirkcudbright	190	40	41	37.2	20.6	34.6	19.0	36.4	170	30	44	31.7	15.4	33.5	16.2	36.2
Lanark	7,300	1,600	1,668	34.9	18.3	37.5	19.9	36.0	200	40	50	32.3	14.7	32.8	15.2	32.6
Mid-Lothian	23,000	4,900	4,631	40.5	21.8	45.6	24.5	44.9	15,000	2,800	2,974	41.1	18.9	43.8	20.9	43.9
Moray	3,300	740	642	41.3	23.0	41.5	23.2	41.9	33,000	6,500	6,916	38.2	18.7	37.2	18.3	38.6
Nairn	..	..	..	..	..	..	..	..	6,600	1,200	1,687	31.3	14.8	28.3	13.2	31.5
Orkney	..	..	..	..	..	..	..	..	13,000	2,300	2,755	38.2	16.8	36.6	15.7	33.6
Peebles	20	4	4	40.0	21.4	40.0	21.5	..	440	80	92	38.0	17.0	32.0	15.4	34.7
Perth	30,000	6,400	6,491	36.6	19.7	39.0	20.8	37.6	7,000	1,400	1,418	39.5	19.4	40.3	19.2	36.5
Renfrew	6,800	1,400	1,287	42.4	22.4	40.2	21.2	41.5	120	20	26	36.0	16.1	36.0	16.1	*35.4
Ross and Cromarty	2,800	610	568	39.5	21.6	44.2	23.9	42.7	19,000	3,600	4,793	32.1	14.9	34.7	16.1	33.9
Roxburgh	3,200	700	859	30.0	16.3	41.4	22.7	38.7	19,000	3,800	4,720	32.2	16.0	42.9	20.9	36.7
Selkirk	20	4	5	30.0	16.1	..	..	‡36.8	90	20	31	24.0	11.8	34.5	16.6	34.3
Stirling	5,100	1,100	1,171	35.1	18.7	35.5	19.0	35.9	800	150	175	35.9	17.3	35.6	15.9	33.2
Sutherland	..	..	..	..	..	..	..	..	750	150	158	37.8	18.4	38.0	18.5	37.0
West Lothian	9,600	2,100	1,985	38.7	20.8	44.7	24.1	45.1	6,000	1,100	1,138	42.3	19.9	49.5	23.6	46.5
Wigtown	..	..	..	..	.	40.0	21.1	*37.0	230	40	51	35.6	17.3	40.1	19.7	40.9
Zetland	.	..	..	..	..	..	..	..	1,800	340	480	30.8	14.2	33.2	15.2	30.2
Total all Scotland	222,574	48,009	50,024	35.6	19.2	39.1	21.0	38.9	388,106	73,972	87,900	35.3	16.8	37.7	17.8	37.0

‡ Average of 5 years only.

* Average of 9 years only.

TABLE No. 3.—TOTAL PRODUCE OF OATS, ACREAGE and YIELD per Acre in the Year 1931, compared with the YIELD for the Year 1930, and the AVERAGE of the Ten Years, 1921-1930, in each COUNTY OF SCOTLAND.

COUNTIES.	OATS.							
	Total Produce in 1931.		Acreage in 1931.	Yield per acre.				Average of the Ten Years, 1921-1930.
				1931.		1930.		
	Qrs.	Tons.	Acres	Bush.	Cwt.	Bush.	Cwt	Bush.
Aberdeen . .	812,000	121,000	169,853	38.3	14.3	36.7	13.1	36.7
Angus . . .	313,000	47,000	53,352	47.0	17.5	49.9	18.0	48.8
Argyll . . .	68,000	9,600	14,118	38.5	13.6	38.1	13.4	37.2
Ayr . . .	197,000	28,000	33,517	47.0	16.7	48.1	17.4	46.9
Banff . . .	222,000	34,000	42,077	42.1	16.0	40.2	15.1	43.3
Berwick . . .	103,000	15,000	24,284	34.0	12.6	37.8	13.9	39.4
Bute . . .	23,000	3,200	4,184	43.0	15.3	42.6	15.1	41.7
Caithness . .	113,000	16,000	25,175	36.0	12.6	36.2	12.8	34.8
Clackmannan .	15,000	2,200	2,514	47.4	17.6	47.5	17.7	44.0
Dumfries . .	148,000	21,000	31,981	37.0	13.4	42.0	15.2	39.6
Dunbarton . .	29,000	4,100	5,614	41.5	14.5	44.7	15.8	41.6
East Lothian .	89,000	13,000	13,612	52.4	19.1	56.0	20.9	54.8
Fife . . .	209,000	31,000	37,714	44.2	16.4	46.9	16.9	46.9
Inverness . .	108,000	15,000	27,263	31.6	11.1	28·6	9.9	28.7
Kincardine . .	160,000	23,000	30,081	42.6	15.4	47·5	17.6	45.7
Kinross . . .	34,000	4,900	5,834	46.1	16.7	40·0	14.6	40.6
Kirkcudbright .	89,000	12,000	18,245	38.8	13.5	36·1	12.9	34.5
Lanark . . .	158,000	23,000	32,548	38.9	13.8	40·3	14.4	42.0
Mid-Lothian . .	115,000	17,000	18,013	51.0	18.5	52·8	19.6	49.5
Moray . . .	119,000	18,000	23,132	41.0	15.4	41·3	15.4	42.3
Nairn . . .	30,000	4,500	6,028	39.6	14.8	34·3	12.6	34.5
Orkney . . .	142,000	20,000	29,219	39.0	13.7	37·3	12.9	34.7
Peebles . . .	23,000	3,200	4,982	37.6	13.0	38·4	13.9	38.9
Perth . . .	315,000	46,000	57,736	43.6	15.9	46·0	16.7	44.7
Renfrew . .	39,000	5,600	7,749	40.6	14.5	38·3	14·1	40.2
Ross and Cromarty	152,000	22,000	31.522	38.7	14.2	40·6	14.9	40.1
Roxburgh . .	103,000	15.000	20,903	39 4	14.3	42·1	15·1	39.0
Selkirk . . .	13,000	1,800	3,073	33.0	11.8	37·8	13·2	33.6
Stirling . . .	71,000	11,000	15,019	38.0	13.9	42.1	14.9	47.4
Sutherland . .	29,000	4,300	6,381	36.4	13.4	37.4	13.8	35.6
West Lothian .	57,000	8,500	9,374	49.0	18.1	55.6	20.5	52.9
Wigtown . .	130,000	19,000	23,706	43.8	16.4	42.2	15.7	37.3
Zetland . . .	23,000	3,300	5,884	31.3	11.2	35.1	12.3	26.5
Total all Scotland	4,251,000	622,200	834,687	40.7	14.9	41.6	15.0	41.0

ABLE No. 4.—TOTAL PRODUCE OF BEANS AND POTATOES, ACREAGE and YIELD per Acre in the Year 1931, compared with the YIELD for BEANS for the Year 1930 and for POTATOES for the Years 1930 and 1929, and the AVERAGE of the Ten Years, 1921-1930, in each COUNTY of SCOTLAND.

COUNTIES.	BEANS.								POTATOES.					
	Total Produce in 1931.		Acreage in 1931.	Yield per acre.				Average of the Ten Years, 1921 1930	Total Produce in 1931.	Acreage in 1931.	Yield per acre.			Average of the Ten Years, 1921-1930.
				1931.		1930.					1931.	1930.	1929.	
	Qrs.	Tons.	Acres.	Bush.	Cwt	ush.	Cwt.	Bush.	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.
Aberdeen	6	1	3	17.0	9.1	18.6	10.0	14.5	36,000	6,968	5.1	5.3	6.7	6.4
Angus	280	60	51	44.5	25.1	48.0	27.0	39.8	85,000	17,168	4.9	6.8	8.1	6.7
Argyll	20	4	4	41.5	21.5	40.0	20.7	*35.8	11,000	2,452	4.4	5.6	6.2	5.4
Ayr	550	110	138	32.0	16.0	36.2	18.2	36.2	58,000	7,572	7.6	9.3	10.0	8.3
Banff	90	20	31	22.8	12.8	27.4	14.7	22.4	7,900	1,602	4.9	5.4	6.5	5.9
Berwick	950	200	232	32.6	17.6	34.2	18.8	29.4	8,000	1,989	4.1	5.5	6.2	5.9
Bute	5	1	12	38.0	19.0	38.0	19.7	35.7	5,200	908	5.7	7.0	7.1	6.4
Caithness	..	..	..	..	..	..	..	..	5,200	988	5.3	6.1	7.3	5.9
Clackmannan	1,000	230	217	38.0	21.4	39.8	22.4	37.8	1,300	304	4.2	5.9	7.4	6.2
Dumfries	..	..	..	..	..	..	..	..	15,000	2,732	5.6	8.0	8.2	7.4
Dunbarton	..	..	..	..	..	..	..	§26.9	12,000	1,950	5.9	7.6	8.3	7.3
East Lothian	170	40	42	32.3	17.7	35.0	19.0	35.8	43,000	7,584	5.7	8.1	8.7	7.5
Fife	2,200	490	516	34.2	19.0	37.5	20.8	37.0	77,000	14,959	5.2	7.6	9.3	6.9
Inverness	..	..	..	..	..	24.0	12.4	..	22,000	4,467	4.8	5.7	4.2	4.1
Kincardine	40	9	13	24.9	13.1	40.0	22.1	31.3	17,000	3,558	4.9	5.9	6.9	6.3
Kinross	..	..	..	..	..	..	..	†34.8	4,100	1,021	4.0	5.7	6.8	6.5
Kirkcudbright	40	9	10	33.0	13.3	28.0	16.3	*32.8	5,800	1,185	4.9	7.6	8.9	7.3
Lanark	..	..	..	..	..	..	..	..	30,000	5,502	5.5	7.3	7.9	7.4
Mid-Lothian	20	4	4	38.0	21.4	..	..	§35.5	37,000	5,550	6.6	7.9	8.7	7.5
Moray	80	20	27	23.9	13.4	27.5	15.5	26.4	8,500	1,525	5.4	5.8	7.1	6.2
Nairn	..	..	..	..	..	..	..	..	1,000	242	4.3	4.7	6.2	4.7
Orkney	..	..	..	..	..	..	..	..	14,000	1,914	7.6	5.8	5.8	5.3
Peebles	..	..	..	..	..	..	..	..	1,500	260	5.9	7.5	8.6	7.0
Perth	2,700	570	720	30.1	15.9	34.6	18.1	32.7	78,000	15,690	5.0	6.9	7.7	6.5
Renfrew	80	20	16	40.0	21.4	40.0	21.4	40.6	21,000	2,764	7.7	7.6	9.7	8.3
Ross and Cromarty	11	2	3	30.0	16.1	24.0	12.5	‡22.0	36,000	6,537	5.4	6.4	6.9	5.8
Rexburgh	60	13	21	21.9	12.0	24.0	13.3	27.7	5,100	1,103	4.6	8.0	9.3	6.7
Selkirk	..	..	..	..	..	..	..	..	500	115	3.8	6.6	7.6	6.2
Stirling	3,500	740	1,159	24.0	12.8	39.8	21.4	32.4	18,000	2,970	6.0	6.6	9.6	8.1
Sutherland	..	..	..	..	..	..	..	..	4,400	944	4.7	6.3	6.2	5·7
West Lothian	120	30	31	32.0	17.8	34.9	19.3	36.9	13,000	2,235	5.9	8.4	9.1	7.9
Wigtown	270	60	72	29.6	15.9	34.6	20.0	25.5	7,100	1,429	5.0	7.9	8.2	6.8
Zetland	..	..	..	..	..	..	..	..	11,000	1,915	5.9	3.2	7.4	5.7
Total	12,192	2,633	3,311	29.5	15.9	36.8	20.0	33.0	699,400	128,102	5.5	7.0	8.0	6.7

* Average of 9 years only. † Average of 5 years only. ‡ Average of 6 years only. § Average of 8 years only.

TABLE No. 5.—TOTAL PRODUCE of TURNIPS SWEDES and MANGOLDS, ACREAGE and YIELD per Acre in the Year 1931, compared with the YIELD for the Years 1930 and 1929, and the AVERAGE of the Ten Years, 1921-1930, in each COUNTY of SCOTLAND.

COUNTIES.	TURNIPS AND SWEDES.						MANGOLDS.					
	Total Produce in 1931.	Acreage in 1931.	Yield per Acre.			Average of the Ten Years, 1921-1930.	Total Produce in 1931.	Acreage in 1931.	Yield per Acre.			Average of the Ten Years, 1921-1930.
			1931.	1930.	1929.				1931.	1930.	1929.	
	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.
Aberdeen	1,180,000	75,410	15.6	11.8	15.7	15.3	40	3	11.7	..	13.0	11.9§
Angus	405,000	28,097	14.4	15.1	18.4	18.1	140	12	12.0	19.0	18.5	16.2
Argyll	70,000	4,546	15.4	17.0	17.0	15.3	80	6	13.6	16.7	11.2	12.8
Ayr	111,000	6,539	16.9	21.0	21.0	19.4	3,900	197	19.8	21.8	22.8	20.3
Banff	301,000	18,081	16.6	16.8	16.5	16.1	30	2	16.0	12.0	..	..
Berwick	266,000	17,775	15.0	15 1	19.4	18.8	1,600	101	15.5	22.3	19.8	17.6
Bute	15,000	1,105	14.0	17.0	16.8	15.4	70	5	13.9	16.9	16.8	14.9*
Caithness	164,000	9,613	17.0	17.8	19.6	19.1	..	..	..	..	..	..
Clackmannan	7,000	670	10.4	12.5	15.3	15.7	..	..	..	24.0	..	..
Dumfries	234,000	13,593	17.2	19.9	19.1	18.5	2,100	138	15.0	17.0	15.3	17.0
Dunbarton	20,000	1,276	15.4	16.8	18.2	18.3	150	10	15.0	21.9	17.2	19.6
East Lothian	193,000	11,488	16.7	19.6	22.2	20.1	5,600	345	16.3	22.4	21.5	20.6
Fife	209,000	18,611	11.2	16.0	19.8	18.3	450	30	15.0	18.7	21.3	17.4
Inverness	105,000	8,072	13.0	13.0	14.3	13.3	..	..	..	..	..	..
Kincardine	231,000	14,355	16.1	18.1	21.4	19.3	..	..	..	..	..	..
Kinross	17,000	2,197	7.8	11.5	15.0	16.0	..	..	..	24.0	..	..
Kirkcudbright	102,000	8,254	12.3	16.4	18.3	15.8	540	38	14.2	16.7	18.6	16.3
Lanark	165,000	8,967	18.4	21.4	21.3	19.6	320	18	17.7	20.3	19.0	16.8
Mid-Lothian	145,000	8,778	16.5	19.0	19.9	18.4	380	20	19.0	21.4	24.2	21.2
Moray	198,000	12,482	15.9	15.8	17.1	16.6	210	11	19.5	20.0	18.9	16.2
Nairn	43,000	3,579	12.1	12.6	14.4	13.1	..	..	..	..	..	..
Orkney	137,000	12,285	11.1	12.4	12.1	10.7	..	..	..	..	..	..
Peebles	43,000	2,515	17.2	20.4	20.7	18.9	30	2	15.0	..	..	19.0†
Perth	345,000	21,599	16.0	17.8	17.7	17.5	50	4	11.3	15.0	11.8	14.2
Renfrew	35,000	1,846	18.9	18.6	19.3	18.0	220	11	20.0	20.0	20.0	19.5
Ross and Cromarty	192,000	12,865	14.9	15.8	16.8	16.3	50	4	12.0	14.0	14.0	15.2
Roxburgh	186,000	14,620	12.8	14.6	17.9	15.7	490	37	13.2	13.3	19.9	13.0
Selkirk	20,000	1,738	11.4	13.5	17.5	16.3	30	2	14.0	10.0	16.8	14.2‡
Stirling	39,000	3,231	12.0	17.1	25.6	21.0	20	2	8.0	9.7	21.7	21.0
Sutherland	28,000	2,384	11.9	17.7	18.1	15.2	20	2	8.0	..	..	..
West Lothian	50,000	2,986	16.6	19.9	19.7	19.9	180	12	15.0	20.8	20.1	21.9
Wigtown	174,000	10,758	16.2	16.4	17.1	16.2	2,900	194	15.0	21.9	21.8	17.0
Zetland	8,000	1,013	8.2	5.9	11.3	11.9	..	..	..	..	..	..
Total	5,438,000	361,328	15.1	15.6	17.8	16.9	19,600	1,206	16.2	20.8	20.6	18.6

* Average of 9 years only. † Average of 5 years only. ‡ Average of 6 years only. § Average of 8 years only.

TABLE No. 6.—TOTAL PRODUCE OF HAY from Rye-Grass and other Rotation Grasses and Clover, also Total from Permanent Grass, ACREAGE, and YIELD per Acre in the Year 1931, compared with the YIELD for the Years 1930 and 1929, and the AVERAGE of the Ten Years, 1921-1930, in each COUNTY of SCOTLAND.

COUNTIES.	FROM RYE-GRASS AND OTHER ROTATION GRASSES AND CLOVER.						FROM PERMANENT GRASS.					
	Total Produce in 1931.	Acreage in 1931.	Yield per Acre.			Average of the Ten Years, 1921-1930.	Total Produce in 1931.	Acreage in 1931.	Yield per Acre.			Average of the Ten Years, 1921-1930.
			1931.	1930.	1929.				1931.	1930.	1929.	
	Tons.	Acres.	Cwt.	Cwt.	Cwt.	Cwt.	Tons.	Acres.	Cwt.	Cwt.	Cwt.	Cwt.
Aberdeen	78,000	54,358	28.6	24.1	25.7	27.3	1,350	1,276	21.2	18.3	21.8	22.5
Angus	48,000	24,448	39.2	37.5	37.8	36.8	2,550	1,719	30.0	30.8	33.0	29.7
Argyll	20,000	12,274	32.4	30.6	32.3	30.3	19,780	14,616	27.9	27.7	25.4	29.4
Ayr	46,000	27,575	33.3	32.1	31.7	32.0	47,000	21,858	42.7	42.4	42.1	40.8
Banff	16,000	10,979	29.4	27.9	29.4	29.2	540	506	21.2	20.6	22.7	21.3
Berwick	21,000	12,829	33.4	31.4	36.9	33.5	4,620	2,957	31.0	28.4	37.3	25.9
Bute	4,200	2,378	35.4	35.6	34.9	36.6	840	520	32.4	35.2	34.1	33.7
Caithness	9,000	9,655	18.8	15.2	17.3	18.1	380	839	9.1	8.0	8.0	8.2
Clackmannan	2,800	1,219	45.8	47.8	52.4	43.1	3,970	1,355	58.2	57.2	54.0	46.2
Dumfries	36,000	20,290	35.8	32.6	33.0	30.8	28,800	19,160	29.8	28.6	28.6	28.8
Dunbarton	11,000	5,327	40.8	41.6	38.4	36.7	4,100	2,058	39.9	41.2	38.7	34.9
East Lothian	23,000	9,520	48.2	50.1	50.4	48.3	1,700	1,165	29.6	30.5	31.3	34.4
Fife	68,000	27,123	50.2	41.9	44.3	39.9	9,000	4,748	37.8	34.8	33.7	32.4
Inverness	14,000	12,178	22.3	21.0	23.7	22.2	8,800	9,492	18.5	18.7	21.3	19.6
Kincardine	24,000	13,149	36.8	31.8	34.3	35.0	530	379	27.8	24.5	25.5	29.4
Kinross	6,500	3,052	42.4	40.0	43.5	38.6	1,500	851	34.4	34.4	35.1	35.7
Kirkcudbright	16,000	11,061	29.0	25.7	27.0	26.5	16,500	12,141	26.9	25.2	25.5	24.9
Lanark	57,000	30,905	36.8	32.2	35.7	34.5	23,800	13,598	34.2	30.2	32.8	32.4
Mid-Lothian	26,000	11,169	47.4	48.0	50.0	46.8	3,800	2,466	31.2	34.3	36.4	35.7
Moray	6,900	6,639	20.7	19.4	20.6	21.5	250	259	19.2	18.8	18.9	18.1
Nairn	1,900	1,793	21.7	18.7	21.5	20.3	30	34	15.1	14.0	16.0	16.3
Orkney	20,000	10,937	36.8	34.2	35.2	28.8	580	796	14.4	14.4	15.6	10.7
Peebles	5,300	2,665	39.4	32.9	35.8	33.2	1,920	1,428	27.3	28.7	29.6	30.5
Perth	55,000	34,011	32.1	28.1	31.2	31.0	18,300	11,839	31.4	29.9	28.8	29.1
Renfrew	18,000	8,152	43.1	41.8	46.2	40.3	12,700	6,021	42.2	43.5	50.6	43.0
Ross and Cromarty	17,000	13,298	25.0	21.2	20.1	21.4	4,100	4,237	19.4	16.2	14.4	16.2
Roxburgh	16,000	10,911	29.6	31.8	31.6	33.2	7,900	7,073	22.3	29.5	28.3	31.1
Selkirk	2,800	1,449	28.6	27.2	32.9	35.3	2,700	2,191	24.6	29.3	28.1	35.9
Stirling	20,000	10,542	37.1	42.4	47.3	39.4	22,100	8,958	50.7	50.8	51.3	45.0
Sutherland	5,100	4,596	22.3	18.2	18.8	19.7	1,500	1,614	18.4	16.2	16.5	16.2
West Lothian	16,000	6,793	48.3	49.9	47.8	45.3	2,400	1,293	37.3	49.8	44.3	41.3
Wigtown	15,000	9,308	32.9	28.1	29.2	29.6	9,500	6,082	31.1	30.4	40.7	30.2
Zetland	2,500	1,674	29.5	28.9	24.3	27.7	1,900	2,114	18.2	20.3	17.5	18.5
Total	728,000	422,257	34.4	31.7	33.3	32.2	265,440	165,648	32.1	31.5	32.1	31.4

TABLE No. 7.—HAY from Permanent Grass:—TOTAL PRODUCE, ACREAGE, and YIELD PER ACRE, in 1931, in each COUNTY OF SCOTLAND, distinguishing HAY from TIMOTHY MEADOWS and HAY from OTHER MEADOWS.

COUNTIES.	TIMOTHY MEADOWS.			OTHER MEADOWS.		
	Total Produce in 1931.	Acreage in 1931.	Yield per Acre in 1931.	Total Produce in 1931.	Acreage in 1931.	Yield per Acre in 1931.
	Tons.	Acres.	Cwt.	Tons.	Acres.	Cwt.
Aberdeen	50	24	39·7	1,300	1,252	20·9
Angus	650	316	41·2	1,900	1,403	27·5
Argyll	780	432	36·2	19,000	14,184	27·6
Ayr	32,000	13,121	48·5	15,000	8,737	34·1
Banff	..	..	..	540	506	21·2
Berwick	220	175	25·6	4,400	2,782	31·4
Bute	50	27	36·0	790	493	32·2
Caithness	..	..	..	380	839	9·1
Clackmannan	3,600	1,195	59·8	370	160	46·1
Dumfries	6,800	4,116	32·9	22,000	15,044	28·9
Dunbarton	2,400	982	49·1	1,700	1,076	31·5
East Lothian	400	152	52·4	1,300	1,018	26·2
Fife	3,900	1,567	49·2	5,100	3,181	32·1
Inverness	..	..	..	8,800	9,492	18·5
Kincardine	..	..	..	530	379	27·8
Kinross	300	150	39·8	1,200	701	33·4
Kirkcudbright	4,500	2,408	37·8	12,000	9,733	24·2
Lanark	15,000	7,430	39·1	8,800	6,168	28·4
Mid-Lothian	1,300	582	45·9	2,500	1,884	26·6
Moray	..	..	..	250	259	19·2
Nairn	..	..	..	30	34	15·1
Orkney	..	..	..	580	796	14·4
Peebles	520	288	36·0	1,400	1,140	25·1
Perth	8,300	3,403	48·7	10,000	8,436	24·4
Renfrew	9,000	4,086	44·4	3,700	1,985	37·7
Ross and Cromarty	..	..	..	4,100	4,237	19·4
Roxburgh	300	197	29·9	7,600	6,876	22·1
Selkirk	200	119	32·8	2,500	2,072	24·2
Stirling	18,000	5,921	63·0	4,100	3,037	26·8
Sutherland	..	..	..	1,500	1,614	18·4
West Lothian	1,500	636	48·6	900	657	26·3
Wigtown	1,700	933	36·2	7,800	5,149	30·1
Zetland	..	..	..	1,900	2,114	18·2
Total	111,470	48,210	46·2	153,970	117,433	26·2

TABLE No. 8.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS IN EACH COUNTY OF SCOTLAND AS RETURNED ON 4TH JUNE 1931

COUNTIES.	HORSES (including Ponies).					CATTLE.							SHEEP.				PIGS.		
	Used solely for Agriculture, &c.*	Stallions.†	Unbroken Horses.		Other Horses.	Cows in Milk.	Cows in Calf, but not in Milk.	Heifers in Calf.	Bulls used for Service.	Other Cattle.			Ewes kept for Breeding.	Rams to be used for Service.	1 Year Old and above.	Under 1 Year.	Sows kept for Breeding.	Boars used for Service.	Other Pigs.
			1 Year & above.	Under 1 Year.						2 Years & above.	1 Year & under 2 Years.	Under 1 Year.							
1. Aberdeen	17,994	42	2,591	1,008	2,618	36,660	3,676	2,454	1,700	38,585	50,738	36,919	156,948	4,807	49,779	199,542	2,771	249	16,933
2. Angus	6,757	3	329	102	479	9,804	993	765	452	15,612	13,633	7,866	90,691	2,965	21,248	102,883	1,188	110	7,068
3. Argyll	3,514	17	486	152	395	15,810	2,513	1,833	827	6,830	9,894	12,194	351,652	10,501	100,589	251,983	463	59	3,345
4. Ayr	5,845	26	815	253	829	40,948	7,065	11,292	2,434	9,085	19,867	21,554	183,315	4,582	47,285	175,001	1,180	108	9,481
5. Banff	5,275	7	836	305	621	10,615	1,093	684	456	5,685	12,791	11,181	44,991	1,389	14,560	53,776	904	87	5,259
6. Berwick	3,033	16	331	72	488	3,712	871	729	311	5,224	9,142	4,956	151,092	3,903	40,808	215,837	699	103	3,513
7. Bute	787	7	98	47	117	2,615	347	585	177	1,150	2,158	2,096	19,300	653	7,020	15,716	61	6	532
8. Caithness	3,531	13	549	172	373	5,767	638	283	163	1,528	4,992	5,419	79,467	2,090	20,875	87,385	235	22	1,352
9. Clackmannan	389	1	55	12	74	1,195	233	157	63	819	982	567	5,855	218	1,804	5,726	72	10	383
10. Dumfries	4,352	10	635	209	700	19,209	2,598	6,190	1,280	9,230	15,718	16,632	259,621	6,625	68,178	246,495	1,305	100	7,577
11. Dunbarton	1,071	18	79	42	123	5,222	1,190	975	282	1,126	2,339	2,290	32,795	1,038	9,762	26,849	158	14	1,100
12. East Lothian	2,577	1	144	43	136	2,290	415	403	166	5,138	4,497	2,108	63,340	1,715	24,562	83,402	496	65	2,510
13. Fife	5,742	13	716	241	731	10,698	1,845	1,528	637	10,901	11,850	8,680	63,695	1,791	14,519	81,914	1,167	145	7,327
14. Inverness	5,138	23	463	126	524	15,688	2,563	1,049	586	3,598	8,184	11,048	246,669	7,005	71,483	178,784	270	39	1,671
15. Kincardine	3,207	5	280	91	494	5,648	581	330	254	6,092	8,815	5,241	33,774	930	5,766	40,381	399	39	2,760
16. Kinross	661	2	120	41	51	1,273	217	187	78	1,606	1,735	1,156	15,837	560	3,653	17,009	89	21	675
17. Kirkcudbright	2,898	8	402	168	322	16,899	1,361	5,390	1,013	8,821	13,685	11,407	174,603	4,750	48,561	172,847	1,026	116	9,900
18. Lanark	4,944	30	572	183	591	26,972	7,028	5,811	1,669	6,854	11,865	11,940	108,004	2,938	28,248	101,204	806	85	6,244
19. Mid-Lothian	2,465	5	172	51	354	7,210	944	725	262	3,012	3,931	2,217	77,141	1,824	28,825	93,101	1,700	146	11,142
20. Moray	3,091	18	379	151	260	5,811	535	322	232	3,912	7,552	5,128	24,109	640	6,836	25,212	571	54	4,280
21. Nairn	825	1	120	35	158	1,917	190	123	103	496	1,853	1,951	6,859	237	3,707	6,148	130	15	575
22. Orkney	4,658	16	529	271	779	9,465	1,157	961	250	4,587	10,425	9,749	26,426	817	7,168	34,269	242	29	1,665
23. Peebles	631	3	40	27	81	1,646	232	532	134	1,037	1,952	1,525	95,290	2,408	19,665	90,184	101	11	817
24. Perth	7,895	41	840	255	906	14,675	2,044	1,960	881	12,154	20,230	15,810	306,121	8,822	82,281	264,293	1,156	127	7,108
25. Renfrew	1,655	8	195	56	264	10,071	2,794	2,081	565	1,860	3,550	3,504	21,053	561	5,228	20,789	381	36	3,528
26. Ross & Cromarty	4,755	5	485	142	451	13,747	2,132	1,087	402	3,523	8,103	7,863	143,856	4,008	58,511	123,964	467	58	3,008
27. Roxburgh	2,680	7	252	68	604	4,914	877	946	369	6,266	6,867	5,199	236,340	6,051	67,389	275,940	424	47	2,572
28. Selkirk	429	..	38	10	105	1,065	141	200	69	631	1,133	774	87,062	1,829	18,950	79,282	38	1	846
29. Stirling	2,616	10	332	90	362	8,433	2,027	1,897	544	6,921	8,116	5,298	59,267	1,701	15,116	53,969	359	45	2,395
30. Sutherland	1,550	5	115	27	119	3,493	645	240	67	483	1,818	1,865	94,074	2,237	43,642	74,290	49	8	360
31. West Lothian	1,347	8	200	59	189	4,061	764	747	273	2,289	2,478	1,993	9,553	257	4,611	12,732	311	36	1,977
32. Wigtown	3,258	19	653	255	286	24,517	1,284	3,377	1,044	8,005	10,271	11,291	65,989	2,005	15,627	68,429	1,201	142	12,055
33. Zetland	1,651	17	173	52	1,568	4,186	709	306	65	959	2,151	2,197	80,201	2,626	25,979	59,743	6	2	190
Total	117,221	405	14,074	4,816	16,152	346,236	51,702	56,149	17,808	194,019	293,315	249,618	3,414,990	94,483	982,235	3,339,079	20 425	2,135	139,613

* Including Mares kept for breeding.

† Above two years old used, or intended to be used, for service.

TABLE No. 9.—QUANTITY AND VALUE OF CORN, &c., imported into the United Kingdom in the undermentioned Years.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1929.	1930.	1931.	1929.	1930.	1931.
Wheat from—	Cwt.	Cwt.	Cwt.	£	£	£
Soviet Union (Russia)	..	18,717,260	28,934,088	..	5,751,955	6,594,333
United States . .	22,265,950	21,035,748	11,238,768	11,742,051	9,126,985	3,014,250
Argentine Republic .	45,378,474	15,188,752	20,733,061	22,906,500	6,788,152	5,074,101
British India . .	141,169	3,341,551	481,665	78,134	1,391,356	133,302
Australia . . .	12,797,402	12,712,993	23,248,312	6,840,517	5,645,775	6,028,845
Canada . . .	27,190,852	26,178,553	27,095,958	14,162,371	11,370,653	7,687,399
Other countries . .	3,993,551	7,599,886	7,642,619	2,054,925	2,989,287	1,812,427
Total . .	111,767,398	104,774,738	119,874,471	57,784,498	48,064,163	30,345,157
Wheat, meal, and flour, from—						
France . . .	577,593	1,184,101	1,012,956	286,646	525,188	275,056
United States . .	2,586,495	3,175,752	2,078,783	1,850,850	2,010,459	905,853
Argentine Republic .	758,779	586,728	718,527	330,846	192,728	188,821
Australia . . .	1,332,439	1,709,630	2,559,691	878,280	947,502	876,435
Canada . . .	3,723,966	4,488,382	3,894,610	2,563,214	2,725,498	1,639,683
Other countries . .	774,174	583,641	487,102	423,597	244,832	151,364
Total . .	9,703,446	11,728,234	10,751,669	6,333,433	6,646,207	4,037,212
Barley	11,986,261	15,207,759	15,456,316	5,522,137	4,593,812	4,148,413
Oats	6,929,891	9,631,091	8,766,247	2,747,518	2,409,111	1,925,696
Peas, not fresh . .	1,681,720	1,360,142	1,706,928	1,627,567	1,039,786	1,144,141
Beans, not fresh . .	1,518,042	732,852	929,144	1,091,468	722,558	502,702
Maize	34,908,609	34,164,670	53,275,186	15,282,135	9,934,857	9,922,416
Maize products . .	2,877,441	2,770,550	2,184,594	1,406,077	1,001,313	665,227
Oat products . . .	681,399	595,843	881,408	758,767	614,821	761,252
Rice—						
From Spain . .	364,739	502,406	477,055	323,904	370,927	293,543
From United States .	447,559	276,815	336,853	441,395	304,125	319,338
From British India .	751,374	971,916	886,826	492,382	526,405	342,754
From other countries	817,116	537,016	699,939	533,116	326,877	304,508
Other kinds of grain .	418,712	401,594	394,241	276,228	190,290	128,038
Other products . .	467,552	508,732	547,555	508,661	447,770	430,638
Malt	45,930	42,630	30,783	43,709	38,796	27,430
Farinaceous substances not elsewhere specified	927,127	713,885	829,636	741,630	572,013	523,288
Total of corn, &c. .	64,823,472	68,417,901	87,402,711	31,796,694	23,093,461	21,434,384

TABLE No. 10.—RETURN OF THE AVERAGE PRICES OF WOOL in the Years 1930 and 1931.

Years.	Australian.	South African.	English Fleeces.
	Per lb. s. d.	Per lb. s. d	Per lb. s. d. s. d.
1930	1 1½	1 1¾	0 10⅜ to 1 2¼
1931	0 9¾	0 10¼	0 5⅞ ,, 0 9⅝

TABLE No. 11.—QUANTITIES AND VALUES OF CORN, MEAT, FOOD PRODUCTS, AND ARTICLES AFFECTING AGRICULTURE, imported into the United Kingdom in the Year 1931, with the Corresponding Figures for 1929 and 1930.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1929.	**1930.**	**1931.**	**1929.**	**1930.**	**1931.**
ANIMALS, LIVING:—	No.	No.	No.	£	£	£
Cattle	750,262	840,561	766,523	13,014,625	14,332,302	12,615,945
Sheep and lambs . . .	584,631	567,192	561,165	1,417,834	1,366,143	1,186,106
Pigs	311,102	414,587	478,941	1,943,888	2,619,366	2,212,612
Total value .	1,645,995	1,822,340	1,806,629	16,376,347	18,317,811	16,014,663
GRAIN, FLOUR, &c.:—	Cwt.	Cwt.	Cwt.	£	£	£
Wheat	111,767,398	104,774,738	119,374,471	57,784,498	43,064,163	30,345,157
Wheat meal and flour . .	9,703,446	11,728,234	10,751,669	6,333,433	6,646,207	4,037,212
Barley	11,986,261	15,207,759	15,456,316	5,522,137	4,593,812	4,143,418
Oats	6,929,891	9,631,091	8,766,247	2,747,518	2,409,111	1,925,696
Peas, not fresh . . .	1,681,720	1,360,142	1,706,928	1,627,567	1,039,786	1,144,141
Beans, not fresh . . .	1,518,042	732,852	929,144	1,091,468	722,558	502,702
Maize or Indian corn . .	34,908,609	34,164,670	53,275,186	15,282,135	9,934,857	9,922,416
Maize products . . .	2,877,441	2,770,550	2,184,594	1,406,077	1,001,313	665,227
Oat products . . .	681,399	595,843	881,408	758,767	614,821	761,252
All other products . .	467,552	508,732	547,555	508,661	447,770	430,638
Malt	45,930	42,630	30,783	43,709	38,796	27,430
Rice	2,380,788	2,288,153	2,400,673	1,790,797	1,528,334	1,260,143
Other kinds of grain . .	418,712	401,594	394,241	276,228	190,290	123,038
Farinaceous substances not elsewhere specified	927,127	713,885	829,636	741,630	572,013	528,288
Total value .	186,294,316	184,920,873	217,528,851	95,914,625	72,803,831	55,816,758
MEAT:—	Cwt.	Cwt.	Cwt.	£	£	£
Beef, salted	6,452	8,885	5,840	21,282	26,412	13,012
*Beef	11,714,976	11,600,648	11,996,057	31,409,330	30,058,004	25,501,231
*Mutton	5,653,925	6,404,454	7,137,229	19,080,444	19,758,333	18,376,844
Bacon	8,278,121	9,191,182	11,137,829	43,742,239	41,151,972	33,135,887
Hams	1,028,788	1,003,026	831,149	5,473,269	4,960,335	3,217,422
Pork, salted (not bacon or hams)	61,812	84,893	66,907	104,674	142,565	109,262
*Pork	593,539	641,161	748,310	2,499,153	2,741,267	2,431,675
Tinned, canned extracts, including tongue	1,202,117	1,483,035	1,470,143	6,349,098	7,742,083	6,125,951
All other kinds . . .	333,677	374,420	397,589	881,612	1,052,073	909,103
*Rabbits (dead) . . .	243,934	289,641	389,060	744,335	745,222	716,057
Total of dead meat .	29,117,341	31,081,345	34,180,113	110,305,436	108,378,266	90,536,444
DAIRY PRODUCE:—	Cwt.	Cwt.	Cwt.	£	£	£
Butter	6,397,266	6,821,620	8,071,167	54,706,404	46,869,697	46,357,997
Margarine	950,084	846,193	693,303	2,738,621	2,421,903	1,924,904
Cheese	2,994,038	3,112,316	2,884,757	13,912,535	12,602,974	9,059,599
Total .	10,341,388	10,780,129	11,649,227	71,357,560	61,894,574	57,342,500
	Gt. Hunds.	Gt. Hunds.	Gt. Hunds.	£	£	£
EGGS in Shell	24,964,393	26,541,289	25,920,308	17,856,167	16,377,646	13,768,338
	Cwt.	Cwt.	Cwt.			
EGGS not in Shell . . .	781,714	851,278	802,093	3,621,340	3,408,219	2,883,696
Total value .	..	..	..	21,477,507	19,785,865	16,652,034

* Fresh, Chilled, and Frozen.

TABLE No. 11—*Continued.*

	Quantities.			Values.		
	1929.	1930.	1931.	1929.	1930.	1931.
POULTRY (alive or dead) . .	..	..	..	£ 3,182,007	£ 3,065,241	£ 3,324,802
GAME (alive or dead) . .	..	..	..	87,204	82,568	76,664
Total value .	..	..	..	3,269,211	3,147,809	3,401,466
FRUIT, VEGETABLES, &c.:—						
Apples	Cwt. 5,757,541	Cwt. 6,171,524	Cwt. 7,600,949	£ 7,062,087	£ 7,552,186	£ 7,882,181
Cherries	143,807	59,511	58,553	315,804	132,026	148,605
Plums, Greengages, Damsons	505,256	389,181	513,265	1,043,243	790,401	920,764
Pears	1,078,224	1,029,367	1,239,224	1,665,153	1,723,051	1,758,246
Grapes	863,757	695,302	944,806	2,017,711	1,841,829	1,887,732
Oranges	9,263,968	10,207,164	10,397,034	9,805,727	9,547,867	9,550,160
Lemons, Limes, &c. . .	1,365,676	1,478,645	1,408,528	1,427,967	1,415,837	1,260,616
Bananas	Bunches. 14,936,719	Bunches. 14,989,564	Bunches. 16,161,732	5,646,412	5,664,135	5,550,719
Fruit (unenumerated) .	Cwt. 1,357,930	Cwt. 1,376,769	Cwt. 1,772,998	2,605,377	2,430,262	2,742,679
Onions	Bushels. 10,685,605	Bushels. 10,788,703	Bushels. 10,170,551	2,268,071	1,590,874	1,756,018
Potatoes	Cwt. 5,869,186	Cwt. 5,781,574	Cwt. 16,587,586	3,172,336	2,680,814	6,924,692
Tomatoes	2,751,473	3,052,101	2,936,766	4,209,981	4,545,237	4,566,096
Vegetables, unenumerated (raw)	..	..	..	1,576,038	1,713,136	1,691,077
Total value .	..	..	..	42,815,807	41,627,155	46,639,535
OTHER ARTICLES:—						
Lard	Tons. 131,048	Tons. 125,250	Tons. 127,444	£ 7,306,995	£ 6,853,243	£ 5,911,121
Wool—sheep and lambs' .	Centals. 8,138,726	Centals. 7,822,868	Centals. 8,559,712	59,766,310	42,474,201	32,988,285
Wood and timber—						
Pit-props or pit-wood .	Loads. 2,692,517	Loads. 2,783,106	Loads. 1,896,498	5,029,098	5,192,802	3,061,482
Sawn soft	5,224,082	4,849,159	4,266,746	23,772,367	20,662,712	14,691,868
Staves	125,675	91,298	45,536	787,084	657,062	368,894
Oilseed-cake and meal .	Tons. 493,476	Tons. 454,807	Tons. 458,318	4,548,975	2,945,440	2,392,744
Seeds—						
Clover and grass . .	Cwt. 304,119	Cwt. 254,395	Cwt. 254,604	702,743	622,966	595,944
Cotton	Tons. 570,007	Tons. 516,699	Tons. 502,458	5,277,479	3,650,270	2,806,150
Flax or linseed . .	284,413	223,299	339,295	4,946,110	3,694,09	3,167,778
Rape	31,383	9,935	21,931	518,624	114,827	182,662
Soya beans	205,022	91,309	110,194	2,333,895	894,995	724,863
Bones (whether burnt or not)	4,639	5,582	5,429	39,627	43,390	31,354
Guano	17,762	16,775	7,920	148,252	104,303	65,450
Basic slag	55,204	33,783	49,421	125,517	81,429	106,128
Superphosphates . . .	148,821	105,476	112,085	353,290	269,083	269,458
Phosphate of lime and rock phosphate	377,717	457,915	258,692	519,321	619,255	338,926
Nitrate of soda . . .	Cwt. 1,572,908	Cwt. 904,505	Cwt. 1,621,129	768,442	419,482	657,623
Cotton, raw of 100 lb.	Centals. 15,397,780	Centals. 12,180,036	Centals. 10,895,295	75,646,011	43,721,828	26,240,185
Hemp	Tons. 94,106	Tons. 83,394	Tons. 84,615	3,477,718	2,588,091	1,776,116
Flax	45,038	40,807	43,261	3,810,930	3,005,348	1,915,808
Hides untanned—						
Dry	Cwt. 525,027	Cwt. 558,428	Cwt. 429,071	2,638,872	2,031,846	1,199,222
Wet	649,375	741,849	842,713	2,481,563	2,297,755	2,121,490
Petroleum	Gallons. 1,708,009,889	Gallons. 1,942,783,951	Gallons. 1,864,290,347	38,629,947	42,160,187	26,050,332

TABLE No. 12.—QUANTITY AND VALUE OF DEAD MEAT imported into the United Kingdom in the undermentioned Years.

	Quantities.			Values.		
	1929.	1930.	1931.	1929.	1930.	1931.
	Cwt.	Cwt.	Cwt.	£	£	£
BACON, from—						
Sweden	379,866	550,278	578,423	2,008,803	2,418,473	1,710,984
Denmark	4,977,026	6,117,866	7,339,095	27,229,516	27,635,729	22,392,206
Netherlands	901,480	842,309	1,000,880	4,631,106	3,756,644	2,885,497
United States	634,594	479,097	189,027	2,879,414	2,096,890	620,623
Irish Free State	497,139	330,679	296,841	2,788,764	1,738,499	1,155,183
Canada	198,491	99,298	49,555	1,027,975	488,759	151,453
Other countries	689,525	771,655	1,684,008	3,176,661	3,016,978	4,219,941
Total	8,278,121	9,191,182	11,137,829	43,742,239	41,151,972	33,135,887
BEEF (salted)—						
Total	6,452	8,885	5,840	21,282	26,412	13,012
BEEF (fresh and refrigerated)—						
United States	36,015	45,959	60,367	196,745	228,278	242,537
Uruguay	947,468	1,142,799	1,017,561	2,531,652	2,945,548	2,130,455
Argentine Republic	9,075,193	8,463,431	8,570,077	24,692,881	22,322,630	19,039,167
Australia	929,366	796,984	1,141,333	2,121,702	1,775,349	1,845,503
New Zealand	125,271	311,220	382,178	298,093	686,905	595,312
Other countries	601,663	840,255	824,541	1,568,257	2,099,294	1,648,257
Total	11,714,976	11,600,648	11,996,057	31,409,330	30,058,004	25,501,231
HAMS, from—						
United States	841,669	820,404	600,631	4,484,879	4,059,803	2,381,476
Canada	98,252	84,034	72,488	539,447	448,244	297,895
Other countries	88,867	98,588	158,030	448,943	452,288	538,051
Total	1,028,788	1,003,026	831,149	5,473,269	4,960,335	3,217,422
TINNED, CANNED EXTRACTS—						
Beef	943,710	1,188,366	1,140,440	4,710,044	5,862,397	4,300,799
Mutton	32,406	49,827	47,347	115,769	213,654	165,835
Pork	144,365	149,403	165,613	1,238,447	1,339,520	1,286,408
,, Other descriptions	81,636	95,439	116,743	284,833	326,512	372,909
Total	1,202,117	1,483,035	1,470,143	6,349,093	7,742,083	6,125,951
ALL OTHER KINDS—						
Tinned or Canned	25,775	47,882	30,500	136,418	253,978	153,666
Salted	383	67	205	1,213	174	463
Other descriptions	307,519	326,471	366,884	743,981	797,921	754,974
Total	333,677	374,420	397,589	881,612	1,052,073	909,103
MUTTON (fresh and refrigerated)—						
Uruguay	366,757	423,327	283,922	1,060,784	1,186,955	706,002
Argentine Republic	1,545,162	1,452,043	1,553,309	4,771,176	4,113,617	3,758,619
Australia	593,490	810,170	1,532,041	2,018,630	2,485,749	3,600,143
New Zealand	2,746,087	3,292,842	3,469,460	10,025,399	10,931,915	9,633,234
Other countries	402,429	426,072	298,497	1,204,455	1,040,097	678,846
Total	5,653,925	6,404,454	7,137,229	19,080,444	19,758,333	18,376,844
PORK (salted), from—						
Denmark	45,277	61,856	47,164	51,035	72,005	52,137
United States	11,390	16,993	14,808	40,131	55,507	45,860
Other countries	5,145	6,044	4,935	13,508	15,053	11,265
Total	61,812	84,893	66,907	104,674	142,565	109,262
PORK (fresh and refrigerated)—						
Irish Free State	296,217	289,315	382,849	1,298,028	1,241,972	1,258,521
New Zealand	169,480	136,945	121,803	633,027	541,914	351,563
Argentine Republic	69,697	74,109	81,220	306,054	319,445	277,521
United States	47,366	108,408	62,208	224,596	518,262	247,284
Other countries	10,779	32,884	100,230	37,453	119,674	296,786
Total	593,539	641,161	748,310	2,499,158	2,741,267	2,431,675
RABBITS (dead), from—						
Belgium	38,815	31,301	25,630	190,005	161,650	128,797
Irish Free State	27,497	17,920	13,720	84,579	55,587	39,988
Australia	157,232	209,785	316,017	396,194	435,227	476,775
New Zealand	10,028	18,919	27,538	27,894	38,732	42,623
Other countries	10,362	11,716	6,155	45,663	54,026	27,874
Total	243,934	289,641	389,060	744,335	745,222	716,057
Total of dead meat	29,117,341	31,081,845	34,180,113	110,305,436	108,378,266	90,536,444

TABLE No. 13.—QUANTITIES AND VALUES OF BUTTER, MARGARINE, CHEESE, AND EGGS imported into the United Kingdom in each Year from 1929 to 1931 inclusive.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1929.	1930	1931.	1929.	1930.	1931.
BUTTER from—	Cwt.	Cwt.	Cwt.	£	£	£
Soviet Union (Russia) .	290,314	165,451	404,369	2,299,050	1,005,260	1,969,244
Finland . .	233,593	233,510	254,071	1,952,445	1,596,699	1,486,898
Estonia . .	110,233	96,338	125,384	893,301	640,875	666,984
Sweden . .	248,301	279,565	211,733	2,112,561	1,970,773	1,272,517
Denmark .	2,204,027	2,318,525	2,466,038	19,736,873	17,102,544	15,639,576
Netherlands .	129,816	89,094	96,117	1,068,813	659,401	598,349
Argentine Republic . .	302,882	414,050	374,925	2,537,187	2,574,220	2,052,352
Irish Free State	566,177	521,963	381,028	4,579,937	3,275,412	2,111,488
Australia .	768,173	950,582	1,558,638	6,342,454	6,017,014	8,353,792
New Zealand .	1,303,793	1,564,436	1,935,033	11,277,012	10,785,724	10,825,309
Other countries	239,957	188,106	263,831	1,906,771	1,241,775	1,381,488
Total .	6,397,266	6,821,620	8,071,167	54,706,404	46,869,697	46,357,997
MARGARINE from—	Cwt.	Cwt.	Cwt.	£	£	£
Netherlands .	918,141	820,479	661,490	2,623,897	2,333,505	1,837,770
France . .	3,764	2,106	1,618	12,417	7,005	4,992
Irish Free State	21,301	19,177	17,280	77,492	68,575	51,108
Other countries	6,878	4,431	12,915	24,815	12,818	31,034
Total .	950,084	846,193	693,303	2,738,621	2,421,903	1,924,904
CHEESE from—	Cwt.	Cwt.	Cwt.	£	£	£
Netherlands .	195,766	183,076	168,219	777,549	673,741	573,934
Italy . .	132,021	144,650	131,783	646,082	692,022	637,034
Australia .	49,679	47,685	68,036	222,909	174,439	193,348
New Zealand .	1,801,189	1,960,901	1,731,641	8,299,734	7,821,634	4,944,523
Canada . .	723,487	678,294	706,725	3,413,155	2,699,918	2,322,269
Other countries	91,896	97,710	78,353	553,106	541,220	388,491
Total .	2,994,038	3,112,316	2,884,757	13,912,535	12,602,974	9,059,599
EGGS from—	Great Hundreds.	Great Hundreds.	Great Hundreds.	£	£	£
Soviet Union (Russia) .	608,161	84,842	262,444	322,758	31,191	83,688
Sweden . .	619,105	491,168	339,003	442,164	327,858	184,710
Denmark .	5,572,629	6,728,383	7,548,245	4,697,634	4,698,356	4,405,757
Poland (including Dantzig)	2,384,741	3,612,564	2,687,069	1,240,403	1,580,326	1,018,008
Netherlands .	3,169,330	3,680,696	3,835,698	2,516,539	2,634,118	2,268,094
Belgium . .	2,961,644	2,333,656	2,072,937	2,241,397	1,545,282	1,154,915
France . .	867,799	658,731	96,680	651,455	390,614	52,528
Egypt . .	572,472	451,479	220,937	240,253	170,561	71,589
China . .	1,624,087	1,712,568	1,499,989	996,012	887,298	647,871
Irish Free State	5,015,072	4,781,096	4,575,107	3,325,881	2,711,038	2,269,568
British South Africa . .	393,991	474,079	589,302	331,834	393,834	418,974
Australia .	375,152	554,653	914,474	315,724	425,835	575,701
Other countries	800,210	977,365	1,278,423	534,113	581,335	616,935
Total .	24,964,393	26,541,280	25,920,308	17,856,167	16,377,646	13,768,338

TABLE No. 14.—NUMBER AND VALUE OF LIVE CATTLE, SHEEP, AND PIGS imported into the United Kingdom in the undermentioned Years. [*From Trade and Navigation Returns.*]

	Number.			Value.		
	1929.	1930.	1931.	1929.	1930.	1931.
CATTLE, from—				£	£	£
Irish Free State . .	749,570	834,962	738,967	12,997,788	14,200,326	12,048,496
Canada	..	5,193	26,991	.	122,077	553,749
Other countries . .	692	406	565	16,837	9,899	13,700
Total . . .	750,262	840,561	766,523	13,014,625	14,332,302	12,615,945
SHEEP AND LAMBS, from—						
Irish Free State . .	584,631	567,192	561,165	1,417,834	1,366,143	1,186,106
Other countries . .	..	..	..	..	..	..
Total . . .	584,631	567,192	561,165	1,417,834	1,366,143	1,186,106
PIGS, from—						
Irish Free State . .	311,102	414,587	478,941	1,943,888	2,619,366	2,212,612
Other countries . .	..	..	..	..	..	..
Total . . .	311,102	414,587	478,941	1,943,888	2,619,366	2,212,612

TABLE No. 15.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS imported into Great Britain from Ireland in each of the Years 1925-1931.

	1925.	1926.	1927.	1928.	1929.	1930.	1931.
†HORSES :—							
Stallions . .	396	411	457	480	495	467	407
Mares . .	7,356	5,209	4,655	4,290	3,952	4,037	3,862
Geldings . .	7,566	5,954	5,855	4,956	4,395	4,528	4,101
Total . .	15,318	11,574	10,967	9,726	8,842	9,032	8,370
CATTLE: Oxen, Bulls, and Cows :—							
Fat . . .	246,829	257,934	284,498	319,983	339,512	301,128	268,677
Store . . .	456,354	393,161	348,723	419,682	414,308	511,249	431,659
Other cattle .	40,936	46,607	53,679	65,267	71,081	81,609	67,806
Calves . .	36,573	22,742	25,892	49,255	57,618	72,155	65,298
Total . .	780,692	720,444	712,792	854,187	882,469	966,141	833,440
SHEEP :—							
Sheep. . .	167,789	216,502	273,388	269,675	250,328	260,711	316,847
Lambs . .	268,653	306,860	367,660	401,062	412,456	389,446	355,448
Total . .	436,442	523,362	641,048	670,737	662,784	650,157	672,295
PIGS :—							
Fat . . .	55,883	185,565	338,961	293,355	265,147	355,166	424,067
Store . . .	2,363	1,698	4,871	1,492	3,648	3,557	5,393
Total . .	58,246	187,263	343,832	294,847	268,795	358,723	429,460

† Not including Army Horses.

EDINBURGH CORN MARKET.

Statement showing the Prices of Wheat, Barley, and Oats for the Year 1931.

The offering of grain by farmers and others in the area of the Market was not resumed during the year. It is hoped that advantage will be taken of the privilege afforded to farmers and merchants of offering grain in the open market, as undoubtedly it enables them to secure the market value, and gives a desirable indication of the true value of the various grains.

The Corn Sales Act of 1921 provides that all sales are to be effected by weight only, and expressed in terms of or by reference to the hundredweight of 112 lb. Experience has proved it to be convenient to quote at a price per 4½ cwt. for Wheat, 4 cwt. for Barley, and 3 cwt. for Oats.

The following statement gives a record of the year's proceedings in Edinburgh Corn Market.

1931.		WHEAT, per 4½ cwt.				BARLEY, per 4 cwt.				OATS, per 3 cwt.			
		Highest.		Lowest.		Highest		Lowest.		Highest.		Lowest.	
		s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
January	7	25	0	24	0	30	0	17	0	17	0	14	0
"	14	26	0	24	0	30	0	23	0	17	6	14	0
"	21	25	0	22	0	29	0	17	0	17	6	14	0
"	28	24	0	22	0	29	0	22	0	17	6	14	0
February	4	24	0	22	0	29	0	22	0	17	6	14	0
"	11	25	6	24	0	29	0	22	0	17	6	14	0
"	18	25	6	24	6	30	0	24	0	17	0	14	6
"	25	25	0	24	6	30	0	24	0	17	6	14	6
March	4	25	6	24	6	30	0	24	0	17	6	14	6
"	11	25	0	24	6	30	0	22	0	17	6	15	0
"	18	25	0	20	0	28	0	20	0	18	0	15	0
"	25	24	0	20	0	28	0	19	0	18	6	15	0
April	1	25	0	20	0	28	0	20	0	20	0	17	0
"	8	25	0	20	0	28	0	21	0	24	0	17	0
"	15	25	0	23	0	27	6	21	0	24	0	21	0
"	22	26	0	25	0	28	0	17	0	24	0	22	3
"	29	27	0	25	6	24	0	17	0	24	0	22	0
May	6	27	0	26	0	30	0	17	0	23	6	21	9
"	13	27	0	25	6	30	0	20	0	25	9	21	6
"	20	26	6	24	6	30	0	20	0	23	6	21	6
"	27	25	0	24	6	30	0	20	0	23	6	21	0
June	3	24	6	23	6	..		..		23	0	21	0
"	10	24	0	21	0	..		..		23	6	21	0
"	17	23	6	22	0	..		..		23	0	21	0
"	23	24	0	22	6	..		..		23	0	21	0
July	1	24	6	22	6	..		..		23	0	21	0
"	8	25	0	24	0	..		..		23	6	21	0
"	15	25	0	24	0	..		..		23	6	20	6
"	22	26	6	25	6	..		..		24	0	20	6
"	29	26	0	25	0	..		..		23	6	20	6
August	5	26	6	25	6	..		..		24	6	20	6
"	12	25	0	22	0	..		..		24	6	20	6
"	19	24	0	22	0	..		..		24	6	24	0
"	26	23	0	22	0	..		..		25	0	23	0
September	2	22	6	22	0	..		..		23	0	22	6
"	9	22	6	22	0	28	0	24	0	21	0	20	0
"	16	22	6	22	0	30	0	22	0	20	3	19	0
"	23	26	0	25	0	30	0	20	0	22	0	20	0
"	30	26	6	25	0	31	0	22	0	22	6	21	6
October	7	27	0	26	0	31	0	22	0	23	0	21	0
"	14	24	0	23	0	32	0	19	0	24	6	23	6
"	21	32	0	24	0	34	0	24	0	25	0	22	6
"	28	33	0	26	0	34	0	25	0	25	0	22	6
November	4	35	0	30	0	34	6	28	0	25	6	22	6
"	11	32	0	30	0	34	6	26	0	25	6	22	6
"	18	32	0	31	0	35	0	28	0	27	0	23	6
"	25	32	0	31	0	36	0	28	0	27	0	24	0
December	2	32	0	31	0	35	0	26	0	27	0	23	6
"	9	32	0	31	0	33	0	26	0	26	0	22	0
"	16	32	0	31	0	32	0	26	0	25	6	22	0
"	23	32	0	30	0	32	0	26	0	25	0	22	0
"	30	31	0	30	0	32	0	24	0	25	0	22	0

PRICES OF SHEEP SINCE 1818.

TABLE No. 1.—CHEVIOT SHEEP.

Year.	Wethers.					Ewes.					Lambs.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1818	28	0	to	30	0	not quoted.					8	0	to	10	0
1819	25	0	″	27	0	15	0	to	17	0	10	6	″	12	0
1820	20	0	″	25	0	16	0	″	17	0	10	0	″	11	0
1821	18	0	″	20	0	14	0	″	16	0	7	6	″	8	0
1822	12	6	″	13	0	8	0	″	8	6	4	6	″	6	0
1823	13	6	″	18	0	7	0	″	10	6	5	6	″	6	0
1824	14	0	″	19	0	7	0	″	9	0	4	6	″	6	0
1825	29	0	″	32	0	15	0	″	19	0	9	0	″	10	6
1826	17	6	″	21	6	13	0	″	15	0	7	0	″	7	6
1827	15	0	″	24	0	not quoted.					7	0	″	8	0
1828	18	0	″	27	6	12	0	to	15	0	7	0	″	8	3
1829	18	0	″	24	0	12	6	″	14	0	7	0	″	8	6
1830	15	0	″	21	0	8	0	″	11	0	6	0	″	6	9
1831	18	0	″	25	0	9	0	″	13	0	7	0	″	8	0
1832	19	0	″	24	0	11	0	″	16	0	7	0	″	9	0
1833	22	0	″	31	0	13	6	″	20	0	8	0	″	11	3
1834	22	0	″	31	0	13	6	″	21	0	9	0	″	11	6
1835	22	0	″	27	6	18	0	″	20	6	8	0	″	11	0
1836	24	0	″	31	6	16	0	″	19	0	10	0	″	14	0
1837	19	0	″	28	0	14	0	″	19	0	10	0	″	13	0
1838	23	0	″	30	6	17	0	″	22	0	12	0	″	14	0
1839	23	0	″	31	0	14	0	″	19	0	0	0	″	13	0
1840	24	0	″	33	0	15	0	″	23	0	7	0	″	11	6
1841	23	0	″	30	0	14	0	″	22	0	8	0	″	12	0
1842	22	6	″	28	0	13	0	″	17	6	7	6	″	10	0
1843	19	0	″	25	0	8	0	″	12	0	5	0	″	8	0
1844	21	0	″	29	0	10	0	″	16	0	8	0	″	10	6
1845	23	0	″	33	0	13	0	″	20	0	8	0	″	13	0
1846	24	0	″	33	6	14	6	″	21	6	10	0	″	14	6
1847	24	0	″	35	0	13	0	″	24	0	11	6	″	15	0
1848	23	0	″	34	6	13	0	″	23	6	11	6	″	15	0
1849	21	0	″	30	2	12	0	″	21	0	0	0	″	14	0
1850	20	6	″	29	6	12	0	″	20	0	8	0	″	13	0
1851	21	6	″	31	0	13	0	″	21	0	8	9	″	14	0
1852	21	0	″	32	0	15	0	″	23	0	8	0	″	14	0
1853	26	6	″	38	0	17	0	″	23	6	9	0	″	17	0
1854	25	0	″	36	0	17	0	″	26	0	9	0	″	16	6
1855	23	6	″	36	0	16	0	″	25	0	10	0	″	17	0
1856	22	0	″	35	6	15	6	″	24	0	10	0	″	15	0
1857	24	0	″	36	0	14	6	″	26	0	10	6	″	14	6
1858	24	0	″	34	6	14	0	″	24	6	10	6	″	14	0
1859	25	0	″	34	6	16	0	″	25	0	10	3	″	14	9
1860	26	0	″	38	0	17	6	″	27	6	12	6	″	17	6
1861	25	0	″	33	6	16	0	″	23	0	9	0	″	16	0
1862	27	0	″	37	6	17	6	″	23	0	10	0	″	16	0
1863	25	0	″	33	6	19	0	″	23	6	10	6	″	16	0
1864	31	0	″	41	0	21	0	″	31	6	14	0	″	18	0
1865	32	6	″	44	0	22	6	″	33	6	14	6	″	20	0
1866	37	0	″	50	0	29	0	″	42	6	15	0	″	26	0
1867	26	0	″	58	0	18	0	″	25	6	12	0	″	16	0
1868	30	0	″	32	0	15	6	″	21	0	7	6	″	13	0
1869	28	0	″	38	0	15	0	″	22	6	7	6	″	14	0
1870	35	6	″	43	0	18	0	″	28	0	10	0	″	17	0
1871	36	6	″	49	0	22	0	″	33	6	14	0	″	20	0
1872	45	0	″	56	0	32	0	″	42	0	16	0	″	22	0
1873	42	0	″	51	0	25	0	″	42	0	15	6	″	22	0
1874	33	6	″	44	6	21	0	″	36	0	12	0	″	17	0
1875	33	0	″	48	6	21	0	″	34	0	13	6	″	23	6
1876	40	0	″	52	6	23	0	″	30	0	13	6	″	25	0
1877	41	0	″	51	0	25	0	″	37	0	15	0	″	24	0
1878	35	6	″	48	0	23	6	″	35	0	14	0	″	22	0
1879	34	0	″	44	0	21	0	″	34	0	14	0	″	20	0
1880	30	0	″	48	6	20	0	″	30	0	12	6	″	20	0
1881	32	0	″	45	6	29	0	″	34	0	14	0	″	20	0
1882	40	0	″	51	0	30	0	″	40	0	14	0	″	20	6
1883	44	0	″	55	6	34	6	″	46	6	15	6	″	23	0

Table No. 1.—CHEVIOT SHEEP—*Continued.*

Year.	Wethers.					Ewes.					Lambs.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1884	36	0	to	47	6	29	6	to	41	6	12	6	to	20	0
1885	30	0	"	38	0	24	0	"	31	0	12	0	"	18	0
1886	32	0	"	40	0	21	0	"	29	0	12	6	"	19	0
1887	29	0	"	36	0	18	0	"	26	0	11	0	"	16	6
1888	30	0	"	38	0	19	0	"	27	0	12	0	"	17	6
1889	36	0	"	44	0	24	0	"	32	0	14	0	"	22	0
1890	31	0	"	40	0	22	0	"	30	0	12	6	"	20	0
1891	27	0	"	38	0	16	0	"	25	0	9	0	"	16	0
1892	22	0	"	30	6	13	0	"	22	0	5	0	"	11	0
1893	26	0	"	35	6	18	0	"	28	6	8	6	"	15	0
1894	26	0	"	37	0	20	0	"	31	0	10	6	"	18	6
1895	28	0	"	39	0	22	0	"	34	0	11	6	"	19	6
1896	24	6	"	34	0	19	0	"	30	6	9	0	"	16	6
1897	27	0	"	36	0	21	0	"	31	6	11	0	"	17	6
1898	27	0	"	37	0	22	0	"	32	6	12	0	"	18	6
1899	24	0	"	33	0	20	0	"	30	6	10	6	"	16	0
1900	26	0	"	36	0	22	0	"	32	6	12	0	"	17	0
1901	25	0	"	32	6	20	0	"	29	6	11	0	"	16	0
1902	24	0	"	31	6	18	0	"	27	0	9	6	"	14	6
1903	26	0	"	34	0	21	0	"	31	0	11	4	"	18	0
1904	28	6	"	36	6	23	0	"	32	6	13	0	"	20	0
1905	27	6	"	35	0	23	0	"	33	0	14	0	"	21	0
1906	30	0	"	38	0	26	0	"	34	6	15	0	"	23	0
1907	28	0	"	34	0	22	0	"	30	6	13	6	"	19	6
1908	26	0	"	32	6	21	0	"	27	6	11	6	"	17	0
1909	24	0	"	31	0	18	0	"	25	6	9	6	"	16	0
1910	27	0	"	35	0	22	0	"	31	0	12	0	"	20	0
1911	24	0	"	31	6	18	6	"	27	6	10	6	"	18	0
1912	26	0	"	34	6	22	0	"	31	0	13	0	"	21	0
1913	30	0	"	39	0	24	0	"	35	6	16	0	"	24	0
1914	32	6	"	41	0	28	0	"	39	0	18	0	"	27	6
1915	36	0	"	46	0	31	0	"	44	0	20	0	"	30	6
1916	40	6	"	51	0	34	0	"	49	0	22	0	"	34	6
1917	43	6	"	56	0	38	0	"	56	0	24	0	"	34	0
1918	50	0	"	66	0	42	0	"	61	0	25	0	"	37	6
1919	53	0	"	69	0	41	6	"	67	0	28	0	"	40	6
1920	56	0	"	91	0	48	0	"	79	0	34	0	"	49	0
1921	45	0	"	60	0	52	3	"	85	9	33	9	"	52	3
1922	40	0	"	56	0	56	0	"	90	6	27	0	"	50	0
1923	44	0	"	65	0	61	0	"	106	0	30	0	"	62	0
1924	41	0	"	61	0	60	0	"	100	0	Ewe lambs— 40 0 to 85 6 Wether lambs— 51 6 to 58 0				
1925	39	3	"	50	0	56	0	"	88	9	Ewe lambs— 36 0 to 82 0 Wether lambs— 22 3 to 50 6				
1926	35	0	"	49	3	34	6	"	64	6	Ewe lambs— 28 6 to 66 6 Wether lambs— 26 3 to 42 0				
1927	28	9	"	46	3	32	6	"	55	6	Ewe lambs— 25 3 to 52 0 Wether lambs— 23 3 to 39 0				
1928	28	3	"	48	6	30	6	"	55	6	Ewe lambs— 28 0 to 45 0 Wether lambs— 22 9 to 47 0				
1929	33	6	"	54	6	34	6	"	62	0	Ewe lambs— 30 6 to 51 9 Wether lambs— 25 6 to 47 0				
1930	36	0	"	54	0	35	0	"	74	6	Ewe lambs— 30 0 to 59 0 Wether lambs— 24 0 to 47 3				
1931	24	0	"	45	6	23	0	"	50	6	Ewe lambs— 21 0 to 57 6 Wether lambs— 17 0 to 37 0				

TABLE No. 2.—BLACKFACE SHEEP.

Year.	Wethers.					Ewes.					Lambs.				
	s.	d.		s.	d.	s.	d.		s.	d.	s.	d.		s.	d.
1819	22	0	to	24	0	12	0	to	15	0	8	0	to	9	0
1820	20	0	"	23	3	15	6	"	17	0	7	0	"	8	6
1821	18	0	"	20	0	12	0	"	18	0	6	0	"	7	0
1822	11	6	"	13	6	5	6	"	6	0	4	6	"	0	0
1823	12	0	"	16	0	5	0	"	6	6	4	0	"	5	3
1824	9	6	"	13	6	6	0	"	7	0	4	0	"	5	0
1825	22	0	"	26	0	11	0	"	18	6	6	0	"	9	0
1826	15	0	"	17	0	8	0	"	9	0	4	6	"	6	0
1827	14	0	"	18	6	7	0	"	10	0	6	0	"	7	6
1828	15	0	"	20	0	8	0	"	11	0	5	0	"	7	6
1829	14	0	"	18	0	9	0	"	10	0	6	0	"	7	0
1830	9	6	"	13	0	4	0	"	6	0	4	6	"	6	0
1831	13	0	"	17	0	5	0	"	7	6	5	0	"	6	6
1832	14	0	"	18	0	7	0	"	11	6	6	0	"	7	3
1833	16	0	"	24	0	7	6	"	12	0	6	6	"	9	0
1834	16	0	"	22	0	10	0	"	13	0	6	0	"	8	6
1835	15	0	"	18	9	10	0	"	13	0	7	0	"	8	0
1836	15	0	"	21	0	9	0	"	12	0	8	6	"	11	0
1837	13	0	"	16	0	8	0	"	12	0	8	0	"	9	6
1838	15	0	"	20	6	10	0	"	18	0	not quoted.				
1839	15	0	"	22	0	10	0	"	12	0	7	0	to	8	3
1840	15	0	"	22	6	11	0	"	12	0	7	0	"	9	3
1841	16	0	"	20	0	9	0	"	11	0	6	0	"	8	0
1842	14	0	"	19	0	7	6	"	8	0	5	6	"	7	0
1843	not quoted.					4	9	"	6	6	not quoted.				
1844	15	0	to	21	0	6	6	"	10	0	5	0	to	8	0
1845	14	0	"	23	0	8	0	"	12	0	6	0	"	8	0
1846	13	0	"	24	0	10	0	"	13	0	8	0	"	9	0
1847	20	6	"	25	0	10	0	"	14	0	8	6	"	9	6
1848	20	0	"	24	0	11	3	"	12	0	8	6	"	10	0
1849	not quoted.					not quoted.					7	0	"	7	6
1850	..					..					7	0	"	0	0
1851	17	6	to	23	0	9	0	to	12	0	6	6	"	8	0
1852	18	6	"	22	0	9	6	"	12	0	4	6	"	7	9
1853	23	0	"	27	0	14	6	"	16	6	8	0	"	11	6
1854	20	0	"	26	0	11	0	"	16	6	8	0	"	10	6
1855	23	6	"	26	6	14	0	"	16	0	10	0	"	11	0
1856	17	0	"	24	0	10	0	"	20	0	7	6	"	10	0
1857	20	0	"	29	0	10	6	"	15	0	9	3	"	11	0
1858	20	0	"	27	6	9	9	"	18	9	8	3	"	10	6
1859	20	0	"	25	0	10	0	"	14	0	8	9	"	11	0
1860	21	0	"	27	3	11	0	"	16	0	10	0	"	13	6
1861	21	0	"	29	0	12	0	"	22	0	6	3	"	14	0
1862	16	9	"	27	0	12	0	"	18	3	6	0	"	12	0
1863	20	0	"	30	6	13	0	"	16	0	8	0	"	11	6
1864	25	0	"	30	0	15	0	"	19	0	10	0	"	13	6
1865	15	6	"	32	6	15	0	"	25	0	10	0	"	17	0
1866	31	6	"	40	0	20	0	"	36	0	13	6	"	22	6
1867	20	0	"	30	6	14	0	"	22	0	7	6	"	13	6
1868	20	0	"	26	0	10	6	"	13	6	7	0	"	13	0
1869	22	0	"	28	0	11	0	"	14	0	6	9	"	9	0
1870	27	0	"	32	6	18	0	"	22	0	8	0	"	14	6
1871	23	0	"	37	0	13	0	"	23	0	11	0	"	16	3
1872	31	6	"	45	0	18	0	"	32	0	12	6	"	18	0
1873	28	0	"	39	0	16	6	"	27	0	7	0	"	16	0
1874	25	0	"	35	0	13	0	"	20	0	7	0	"	14	0
1875	26	6	"	37	6	15	0	"	21	3	9	6	"	17	6
1876	30	0	"	40	0	19	0	"	24	0	13	0	"	20	6
1877	35	0	"	38	9	18	0	"	25	0	13	6	"	23	0
1878	30	0	"	36	0	17	0	"	23	0	12	0	"	22	0
1879	25	0	"	35	9	16	0	"	24	0	10	6	"	20	0
1880	25	0	"	38	0	16	6	"	22	6	10	0	"	17	0
1881	30	0	"	39	0	15	0	"	23	0	10	0	"	15	0
1882	33	0	"	46	0	20	0	"	28	0	12	6	"	18	6
1883	36	0	"	50	6	24	6	"	33	0	14	0	"	21	6
1884	29	0	"	43	6	19	6	"	28	0	12	0	"	19	6
1885	24	0	"	34	0	18	0	"	22	6	10	0	"	15	0
1886	25	0	"	34	0	12	0	"	22	0	10	6	"	16	0
1887	22	0	"	30	0	11	0	"	19	0	8	0	"	13	0
1888	22	0	"	32	0	13	0	"	24	0	10	0	"	15	0
1889	26	0	"	40	0	18	0	"	29	0	13	0	"	22	0

TABLE No. 2.—BLACKFACE SHEEP—*Continued.*

Year.	Wethers.					Ewes.					Lambs.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1890	24	0	to	37	0	14	0	to	27	0	10	6	to	19	0
1891	21	0	"	37	0	10	0	"	24	0	7	6	"	15	0
1892	16	0	"	28	6	6	0	"	17	0	3	0	"	10	0
1893	21	0	"	37	0	12	0	"	24	0	7	0	"	14	0
1894	20	0	"	37	0	14	6	"	26	6	8	6	"	16	6
1895	23	0	"	41	0	16	0	"	28	6	9	0	"	17	0
1896	19	0	"	35	4	13	0	"	24	0	6	0	"	13	6
1897	21	0	"	36	6	15	0	"	25	6	7	0	"	14	6
1898	22	0	"	37	0	16	0	"	26	6	8	0	"	15	0
1899	20	0	"	33	6	13	0	"	24	0	5	6	"	13	0
1900	23	0	"	36	0	16	0	"	26	6	8	0	"	15	6
1901	20	0	"	35	0	14	0	"	25	6	6	6	"	14	6
1902	18	6	"	34	0	12	0	"	24	0	6	0	"	14	0
1903	21	0	"	36	0	15	0	"	28	0	7	0	"	16	6
1904	23	0	"	38	6	18	0	"	30	0	8	6	"	17	6
1905	21	6	"	37	0	19	0	"	31	0	9	0	"	18	6
1906	23	0	"	38	0	20	0	"	33	0	10	0	"	19	6
1907	21	0	"	33	6	17	0	"	28	0	8	6	"	17	6
1908	19	6	"	30	0	15	0	"	24	6	8	0	"	16	0
1909	17	0	"	28	0	11	6	"	22	0	6	3	"	13	0
1910	21	0	"	32	6	16	0	"	27	6	8	0	"	17	0
1911	19	0	"	29	6	14	0	"	24	0	7	0	"	15	0
1912	21	6	"	32	6	17	0	"	27	6	9	6	"	17	6
1913	24	6	"	36	0	21	0	"	31	0	12	6	"	21	6
1914	27	0	"	38	6	25	0	"	34	6	15	6	"	24	0
1915	31	0	"	42	6	29	0	"	39	6	17	0	"	25	6
1916	33	0	"	46	6	31	0	"	42	0	19	0	"	27	6
1917	36	0	"	51	0	33	0	"	47	0	21	0	"	30	0
1918	41	0	"	56	0	36	0	"	50	0	27	0	"	33	0
1919	44	0	"	62	0	39	0	"	54	0	29	0	"	36	0
1920	46	0	"	86	0	44	0	"	62	0	31	0	"	43	0
1921	32	9	"	60	9	35	3	"	62	6	20	3	"	47	0
1922	40	3	"	63	0	40	6	"	74	0	18	0	"	44	0
1923	46	0	"	65	6	43	0	"	78	0	21	0	"	45	6
1924	46	0	"	68	6	45	6	"	85	0	25	0	"	55	6
1925	36	0	"	60	0	40	0	"	78	0	17	6	"	44	0
1926	30	0	"	54	0	31	0	"	70	0	Wether lambs—				
											21	9	"	49	0
											Ewe lambs—				
											19	0	"	50	0
1927	26	6	"	48	0	26	0	"	64	0	Wether lambs—				
											17	9	"	40	0
											Ewe lambs—				
											17	6	"	37	9
1928	29	0	"	45	9	24	0	"	57	0	Wether lambs—				
											16	6	"	38	6
											Ewe lambs—				
											17	0	"	38	9
1929	29	9	"	46	0	29	0	"	64	0	Wether lambs—				
											20	9	"	43	0
											Ewe lambs—				
											18	0	"	37	6
1930	31	6	"	45	0	28	6	"	60	0	Wether lambs—				
											20	0	"	45	9
											Ewe lambs—				
											20	0	"	37	6
1931	19	6	"	29	9	15	0	"	38	0	Wether lambs—				
											14	3	"	36	9
											Ewe lambs—				
											16	9	"	40	6

TABLE No. 3.—PRICE OF WOOL, PER STONE OF 24 LB., SINCE 1818.

Year.	Laid Cheviot.	White Cheviot.	Laid Highland.	White Highland.
	s. d. s. d.	s. d. s. d.	s. d. s. d.	s. d. s. d.
1818	40 0 to 42 2	..	20 0 to 22 6	..
1819	21 0 " 22 0	..	10 0 " 10 8	..
1820	20 0 " 22 0	..	9 0 " 10 0	..
1821	18 0 " 20 0	..	9 0 " 10 0	..
1822	12 6 " 14 6	..	5 0 " 6 6	..
1823	9 0 " 10 6	..	5 0 " 5 9	..
1824	13 6 " 15 0	..	6 0 " 6 3	..
1825	10 6 " 22 0	..	10 0 " 10 6	..
1826	11 0 " 14 0	..	5 0 " 5 6	..
1827	11 0 " 14 0	..	5 6 " 6 9	..
1828	8 0 " 11 0	..	5 6 " 6 0	..
1829	8 6 " 11 0	..	4 8 " 0 0	..
1830	9 6 " 11 0	..	4 6 " 5 0	..
1831	17 0 " 20 0	..	7 6 " 8 6	..
1832	14 0 " 16 0	..	7 0 " 7 6	..
1833	18 0 " 20 7	..	10 0 " 11 0	..
1834	21 0 " 24 6	..	5 6 " 7 0	..
1835	19 0 " 20 6	..	9 6 " 10 8	..
1836	21 0 " 25 0	..	10 0 " 14 0	..
1837	12 0 " 14 0	..	7 0 " 7 8	..
1838	19 0 " 22 6	..	6 0 " 10 0	..
1839	18 0 " 20 0	..	8 0 " 12 0	..
1840	15 0 " 0 0	..	7 0 " 0 0	..
1841	15 0 " 16 9	..	6 0 " 7 5	..
1842	12 6 " 14 0	..	not quoted.	..
1843	9 0 " 11 6	..	5 0 to 6 0	..
1844	15 0 " 18 0	..	not quoted.	.
1845	14 6 " 17 6	..	7 6 to 8 6	..
1846	12 0 " 14 6	..	8 0 " 8 6	..
1847	12 6 " 14 0	..	not quoted.	..
1848	9 6 " 11 0	..	4 9 to 0 0	..
1849	12 0 " 16 6	..	6 0 " 6 3	..
1850	15 0 " 17 6	..	8 0 " 8 6	..
1851	12 0 " 16 0	..	8 0 " 9 3	..
1852	13 0 " 15 0	..	8 0 " 9 0	..
1853	19 0 " 22 0	..	11 0 " 12 6	..
1854	12 0 " 15 0	..	7 6 " 8 6	..
1855	14 6 " 19 0	..	8 6 " 9 0	..
1856	19 0 " 21 6	..	11 0 " 0 0	..
1857	19 0 " 24 0	..	13 0 " 14 8	..
1858	15 0 " 17 0	..	8 9 " 10 0	..
1859	18 6 " 24 0	..	10 9 " 11 6	..
1860	22 0 " 32 0	37 0 to 38 0	10 0 " 11 8	..
1861	19 6 " 27 0	from 30s. upwards.	not quoted.	..
1862	18 6 " 26 0	30 0 to 37 0	11 6 to 16 0	..
1863	25 6 " 31 0	38 0 " 42 0	15 3 " 17 6	..
1864	31 0 " 39 0	47 0 " 54 0	17 6 " 20 0	..
1865	28 0 " 30 0	44 0 " 45 0	15 0 " 17 0	..
1866	24 0 " 30 0	30 0 " 38 0	14 0 " 16 0	..
1867	16 0 " 21 6	not quoted.	not quoted.	..
1868	19 0 " 26 0	28 0 to 32 0	8 6 to 9 0	..
1869	18 0 " 26 6	not quoted.	8 6 " 10 0	..
1870	15 0 " 28 6	25 0 to 26 0	9 6 " 0 0	..
1871	20 0 " 26 6	30 0 " 34 6	12 0 " 15 0	..
1872	26 0 " 37 6	40 0 " 48 0	18 0 " 21 0	..
1873	17 0 " 18 0	34 0 " 40 0	9 0 " 12 0	..
1874	18 6 " 26 6	30 0 " 34 0	9 6 " 18 0	..
1875	25 0 " 32 0	34 6 " 36 0	12 6 " 16 0	..
1876	20 0 " 24 0	30 0 " 34 6	9 6 " 12 0	..
1877	20 9 " 26 0	28 0 " 30 0	10 0 " 12 0	..
1878	18 9 " 25 0	27 0 " 32 0	8 6 " 11 6	..
1879	15 0 " 17 0	prices very low.	7 0 " 0 0	..
1880	20 0 " 24 0	30 0 to 32 0	10 6 " 11 6	14 0 to 15 0
1881	17 0 " 21 0	27 0 " 30 0	5 0 " 9 6	12 0 " 18 0
1882	14 0 " 18 0	27 6 " 28 0	7 6 " 9 0	13 0 " 14 0
1883	13 0 " 18 0	26 0 " 28 0	6 6 " 8 6	11 6 " 12 6
1884	18 0 " 18 0	26 0 " 28 0	6 6 " 8 6	11 6 " 12 6
1885	12 0 " 17 0	22 6 " 26 0	6 0 " 8 0	11 6 " 12 0
1886	18 0 " 18 0	23 0 " 27 6	6 6 " 8 6	11 6 " 12 0
1887	14 0 " 22 0	23 0 " 28 0	7 0 " 9 0	11 6 " 18 0
1888	13 0 " 20 0	28 0 " 28 0	7 0 " 9 0	11 0 " 12 6

TABLE No. 3.—PRICE OF WOOL—*Continued.*

Year.	Laid Cheviot.					White Cheviot.					Laid Highland.					White Highland.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1889	13	0	to	18	0	24	0	to	28	0	7	0	to	9	0	11	0	to	12	6
1890	13	0	"	18	0	24	0	"	28	0	7	0	"	9	0	11	0	"	12	6
1891	12	6	"	18	0	22	0	"	28	0	7	0	"	9	0	11	0	"	12	6
1892	12	0	"	18	0	20	0	"	28	0	7	0	"	8	6	10	6	"	12	0
1893	12	0	"	17	0	20	0	"	27	0	7	0	"	8	0	10	0	"	12	0
1894	12	0	"	16	0	20	0	"	26	0	7	0	"	8	0	10	0	"	12	0
1895	12	0	"	16	0	20	0	"	25	0	7	0	"	8	0	10	0	"	11	6
1896	11	0	"	15	0	19	0	"	24	0	7	0	"	8	0	10	0	"	11	6
1897	11	0	"	14	0	18	0	"	23	0	7	0	"	8	0	10	6	"	12	0
1898	10	0	"	13	0	16	0	"	20	0	7	0	"	8	0	10	0	"	11	6
1899	10	0	"	13	0	13	0	"	18	6	7	0	"	8	0	8	6	"	9	6
1900	9	9	"	12	0	13	0	"	18	6	6	9	"	7	9	8	0	"	9	6
1901	9	0	"	10	0	11	0	"	16	6	5	9	"	6	6	8	0	"	9	0
1902	9	0	"	10	0	11	6	"	17	0	6	0	"	6	6	8	6	"	9	6
1903	10	0	"	12	0	15	0	"	18	0	7	0	"	8	0	11	6	"	12	6
1904	15	0	"	17	0	20	0	"	21	0	9	0	"	10	0	14	0	"	15	0
1905	17	0	"	20	0	24	0	"	26	0	10	0	"	11	0	15	0	"	16	0
1906	18	0	"	21	0	27	0	"	28	6	11	6	"	13	0	16	6	"	17	6
1907			*			22	0	"	24	0	11	0	"	12	6	16	0	"	17	0
1908			*			16	0	"	18	0			†			8	0	"	8	6
1909			*			24	0	"	26	0			†			12	6	"	14	0
1910			*			25	0	"	30	0			†			13	0	"	14	6
1911			*			25	0	"	30	0			†			13	0	"	14	6
1912			*			24	0	"	29	0			†			14	0	"	15	0
1913			*			25	0	"	30	0			†			17	0	"	18	0
1914			*			24	0	"	29	0			†			15	0	"	15	6
1915‡			*			42	0	"	46	0			†			21	0	"	22	0

No Cheviots smeared now. † No Highlands smeared now. ‡ These are July prices.

[*See over*

PRICE OF WOOL per stone of 24 lb.—*Continued.*

	CHEVIOT.				HALF-BRED.				BLACK-FACE.		CROSS-BRED (Blackface Ewe and Leicester Ram).			
	Hogg.		Ewe and Wether.		Hogg.		Ewe and Wether.		Hogg.	Ewe and Wether.	Hogg.		Ewe and Wether.	
	Washed.	Un-washed.	Washed.	Un-washed.	Washed.	Un-washed.	Washed.	Un-washed.			Washed.	Un-washed.	Washed.	Un-washed.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
[1] 1916 . . .	36 6	30 0	33 0	27 6	34 6	28 6	33 0	27 6	23 0	23 0	28 6	25 6	28 6	25 6
Caithness & Sutherland	40 0	32 6	34 0	29 0	35 0	29 0	34 0	28 6						
[1] 1917 . . .	40 6	33 0	37 0	31 0	38 6	31 6	37 0	31 0	25 6	25 6	31 6	28 6	31 6	28 6
Caithness & Sutherland	44 6	36 0	37 6	32 6	39 0	32 6	37 6	31 6						
[1] 1918 . . .	43 6	35 6	39 6	33 0	41 0	33 6	39 6	33 0	27 0	27 0	33 6	30 6	33 6	30 6
Caithness & Sutherland	47 6	38 6	40 0	34 6	41 6	34 6	40 0	33 6						
1919 . . .	84 0	70 0	82 0	66 0	82 0	62 0	70 0	58 0	34 0	34 0	46 0	39 0	44 0	38 0
Caithness & Sutherland	88 0	74 0	84 0	68 0	84 0	63 0	72 0	60 0						
1920 . . .	86 0	70 0	83 0	66 0	74 0	54 0	65 0	50 0	24 0	24 0	35 0	29 0	34 0	27 0
Caithness & Sutherland	90 0	74 0	87 0	68 0	76 0	56 0	68 0	52 0						
1921 . . .	22 0	17 0	19 0	15 0	18 6	14 6	16 0	13 0	9 6	9 6	12 0	10 0	12 0	10 0
Caithness & Sutherland	23 0	18 0	20 0	16 0	19 6	15 6	17 0	14 0						
1922 . . .	30 0	25 0	26 0	22 0	26 0	20 0	22 0	18 0	16 0	16 0	16 6	15 0	16 6	15 0
Caithness & Sutherland	31 6	26 0	27 0	23 0	27 0	21 0	23 0	19 0						
1923 . . .	41 0	34 0	36 0	30 0	33 0	27 0	30 0	25 0	17 6	17 6	20 0	18 0	20 0	18 0
Caithness & Sutherland	43 0	35 0	37 0	31 0	34 0	28 0	31 0	26 0						
1924 . . .	58 0	49 0	53 0	45 0	49 0	40 0	45 0	39 0	25 6	25 6	34 6	30 6	33 0	30 0
Caithness & Sutherland	60 0	50 0	54 0	46 0	50 0	41 0	46 0	40 0						
1925 . . .	39 0	34 0	36 0	30 0	33 6	28 6	32 0	27 0	25 6	25 6	26 0	23 6	25 6	23 0
Caithness & Sutherland	40 0	35 0	37 0	31 0	34 0	29 0	33 0	28 0						
1926 . . .	35 0	29 0	32 0	28 0	32 0	26 6	28 0	24 6	19 0	19 0	22 6	20 0	22 0	19 6
Caithness & Sutherland	36 0	30 0	33 0	29 0	33 0	27 6	29 0	25 6						
1927 . . .	38 0	31 0	35 0	31 0	34 6	29 6	32 0	27 6	24 0	24 0	27 0	25 6	27 0	25 0
Caithness & Sutherland	39 0	32 0	36 0	32 0	35 0	30 0	33 0	28 6						
1928 . . .	51 0	43 0	48 0	41 0	47 0	40 0	43 0	37 0	24 6	24 6	33 0	31 0	32 0	30 0
Caithness & Sutherland	52 0	44 0	49 0	42 0	48 0	41 0	44 0	38 0						
1929 . . .	37 0	32 0	34 0	29 0	34 0	29 0	32 0	27 0	24 0	24 0	27 0	25 0	26 0	24 0
1930 . . .	23 0	19 0	22 0	18 0	21 0	17 6	20 0	16 6	12 0	12 0	17 6	15 6	16 6	15 6
1931 . . .	16 6	13 6	15 6	13 0	15 0	13 0	13 6	11 6	11 0	11 0	12 0	10 6	11 6	10 0

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[1] The prices given were prices fixed by Government, and not free market prices.

THE HUNDREDTH SHOW,

HELD AT EDINBURGH IN 1931.

THE Society's One Hundredth Show was held at Edinburgh on Tuesday, 23rd June, and three following days. It was the seventeenth General Show to be held at Edinburgh.

The Show was held, as on the previous occasion in 1927, at Saughton Park, the use of which was kindly granted by the Corporation of Edinburgh. Besides the grant of a free site, the Corporation presented a Gold Challenge Cup for competition at the Show, and gave a donation of £500 to the Show Funds. The site was an excellent one, over 60 acres of good level ground being available, thus permitting the Showyard to be planned and laid out on a scale worthy of the occasion. The plan adopted was found to be convenient, and the appearance of the spacious central square, with the picturesque surroundings of the Pentlands and Corstorphine Hill, was generally admitted to have been unsurpassed at any previous Show.

It is unnecessary here to do more than mention the great misfortune which overtook the Show at the last moment through the cancellation of the classes for Cattle, Sheep, Goats and Pigs, on account of extensive outbreaks of foot-and-mouth disease. With a record entry of Cattle and Sheep, the prospects for the Show were extremely bright, when, on the Friday evening prior to the opening, a telegram was received from the Ministry of Agriculture prohibiting all movement of animals throughout the whole country, and definitely cancelling these classes at the Show. Nothing remained to be done but to see that the many animals in course of transit to the Show were returned to their homes, and that those which had already reached the Showyard were sent back as soon as the necessary licences for their removal could be obtained.

There remained, however, an excellent entry of Horses, and with these, and equally good entries in the Sections for Poultry, Rabbits, Dairy Produce, Wool, Honey, Horse-Shoeing, Rural Industries, Stock Judging, Implements, Machinery and General Exhibits, the Directors had no hesitation in deciding to carry on with the Show. In addition to the above, they had the added attractions of a new Horticultural Section, Butter-making Competitions and an extensive Educational and Research Exhibit, while, to fill the gap caused by the absence of Cattle Parades, displays by the 16/5th Lancers were arranged for each afternoon and evening.

The opening day of the Show was unfortunately marred by rain, but thereafter the weather was perfect, and the attendance of the public was most gratifying. The number who paid for admission during the four days reached the remarkable total of 76,310, which was about 8000 more than at the previous Edinburgh Show in 1927, and had been exceeded only by the great Victory Show in Edinburgh in 1919.

For this success there was no doubt that the Society was mainly indebted to His Royal Highness The Prince of Wales, who not only honoured the Society by accepting the office of President for the year, but paid a prolonged visit to the Show on the Thursday. His Royal Highness presided over the meeting of members in the Showyard, when he received a warm welcome from the large number of members who were present. Besides presenting the Championship Medals to successful exhibitors, His Royal Highness visited and inspected many of the exhibits, evincing a keen interest in all that he saw, and being accorded a most enthusiastic greeting by the numerous visitors who thronged the Show.

The Society was also honoured by the presence at the Show of representatives of leading Agricultural Societies throughout the British Empire. These representatives, who were the guests of the Society during the period of their visit, included Mr William Burkitt, representing the Royal Agricultural Society of England; Mr S. Clarke, The Royal Ulster Agricultural Society; Sir E. H. Macartney, The Royal National Agricultural Association of Queensland; Mr C. J. Coles, The Royal Agricultural and Horticultural Society of South Australia; Mr F. W. J. Moore, The Royal Agricultural Society of Tasmania; Mr John Anderson, The Canterbury Agricultural and Pastoral Association, New Zealand; Mr John C. Begg, The Otago Agricultural and Pastoral Society; Dr Eric A. Nobbs, The Western Province Agricultural Society, Cape Town; and The Hon. J. W. Downie, The Southern Rhodesia Agricultural Society.

On the invitation of the Society, there were present on the Thursday twenty-nine Farm Servants, holders of the Society's Certificate and Gold Medal for long and approved service. These had a minimum record of fifty years' service, and one at least had sixty-five years. After being entertained to luncheon by the Society, they were presented to His Royal Highness, who spoke to each individually. They were thereafter conducted to seats in the Grand Stand to view the afternoon Parade.

It is gratifying to report that the Accounts show a credit balance of slightly over £700.

On being informed of the financial success of the Show, His Royal Highness sent the following letter through his Private Secretary :—

> “The Prince of Wales has read your letter of November 30th, from which His Royal Highness is delighted to hear that the Hundredth Show of the Highland and Agricultural Society of Scotland, of which he was President, has, despite the unfortunate outbreak of foot-and-mouth disease, proved to have been a financial success.
>
> The Prince, as your Directors know, will always remember with pleasure that he was associated with the Society on this important occasion in its history.”

STATISTICS.

The following tables give the number of entries in the various sections :—

CATTLE.

Class.	SHORTHORN.	No. of Entries.	
1.	Aged bulls	6	
2.	Two-year-old bulls	8	
3.	Two-year-old bulls	8	
4.	One-year-old bulls	13	
5.	One-year-old bulls	19	
6.	Cows born before 1st December 1927, in milk	9	
7.	Three-year-old cows	7	
8.	Two-year-old cows, or heifers	12	
9.	One-year-old heifers	23	
10.	One-year-old heifers	15	
		—	120

	ABERDEEN-ANGUS.		
11.	Aged bulls	9	
12.	Two-year-old bulls	11	
13.	One-year-old bulls	7	
14.	One-year-old bulls	9	
15.	Cows born before 1st December 1927, in milk	4	
	Extra Stock	2	
16.	Three-year-old cows, in milk	4	
17.	Two-year-old cows or heifers	12	
18.	One-year-old heifers	13	
19.	One-year-old heifers	8	
		—	79

	GALLOWAY.		
20.	Aged bulls	4	
21.	Two-year-old bulls	5	
22.	One-year-old bulls	6	
23.	Cows born before 1st December 1927, in milk	6	
	Extra Stock	1	
24.	Three-year-old cows, in milk	5	
25.	Two-year-old cows or heifers	15	
26.	One-year-old heifers	20	
27.	Groups	6	
		—	68

Belted Galloway.

28.	Bulls born before 1st December 1929	6	
	Extra Stock	1	
29.	Bulls born on or after 1st December 1929	4	
30.	Cows or heifers, born before 1st December 1928, in milk or in calf; if in calf and not in milk, to calve on or before 1st December of the year of the Show	7	
31.	Heifers born on or after 1st December 1928 and before 1st December 1929	5	
32.	Heifers born on or after 1st December 1929	7	
		—	30

Highland.

33.	Aged bulls	6	
34.	Two-year-old bulls	3	
35.	One-year-old bulls	6	
36.	Cows of any age, in milk	8	
	Extra Stock	1	
37.	Three-year-old heifers	7	
38.	Two-year-old heifers	16	
39.	One-year-old heifers	11	
40.	Bull calves	3	
41.	Heifer calves	3	
42.	Groups	5	
		—	69

Ayrshire.

43.	Cows in milk, born before 1928	15	
44.	Cows in milk, born on or after 1st January 1928	10	
45.	Cows of any age, in calf, and due to calve before 1st December of the year of the Show	14	
	Extra Stock	1	
46.	Heifers, born on or after 1st June 1928, in calf, and due to calve before 1st December of the year of the Show	12	
47.	Heifers born in 1929	12	
48.	Heifers born in 1930	18	
49.	Bulls born before 1929	3	
50.	Bulls born in 1929	7	
51.	Bulls born in 1930	14	
52.	Groups	7	
53.	Groups	8	
		—	121

British Friesian.

54.	Cows in milk, born in or before 1927	10	
	Extra Stock	1	
55.	Cows in calf and not in milk, born in or before 1927	13	
56.	Cows in milk, born in 1928 or 1929	6	
57.	Heifers born in 1929, before 1st July	4	
58.	Heifers born in 1929, on or after 1st July	7	
59.	Heifers born in 1930, before 1st July	11	
60.	Heifers born in 1930, on or after 1st July	11	
61.	Bulls born in or before 1928	5	
	Extra Stock	1	
62.	Bulls born in 1929	8	
63.	Bulls born in 1930, before 1st July	8	
64.	Bulls born in 1930, on or after 1st July	4	
		—	89

RED POLL.

65. Cows in milk, or in calf, born before 1929	6	
66. Heifers born in 1929	5	
67. Heifers born in 1930	6	
68. Bulls born in or before 1929	3	
69. Bulls born in 1930	4	
70. Groups	3	
	—	27

FAT CATTLE.

71. Pure-Bred Aberdeen-Angus steer	9	
72. Ox, any pure breed or cross, born on or after 1st December 1928 and before 1st December 1929	7	
73. Ox, any pure breed or cross, born on or after 1st December 1929	4	
74. Heifer, any pure breed or cross, born on or after 1st December 1928 and before 1st December 1929	2	
75. Heifer, any pure breed or cross, born on or after 1st December 1929	5	
	—	27

DAIRY COW.

76. Dairy cow, in milk, any pure breed or cross, and of any age	5	
77. Dairy cow, in milk, drawn from Classes 30, 43, 44, 54, 56, 65 and 76 (12)	...	
	—	5
		635

HORSES.

CLYDESDALE STALLIONS AND COLTS.

78. Aged stallions	8	
79. Three-year-old entire colts	16	
80. Two-year-old entire colts	16	
81. One-year-old entire colts	26	
	—	66

CLYDESDALE GELDINGS.

82. Aged geldings	6	
83. Three-year-old geldings	10	
84. Two-year-old geldings	8	
85. One-year-old geldings	2	
	—	26

CLYDESDALE MARES AND FILLIES.

86. Mares of any age, with foal at foot	15	
Extra Stock	1	
87. Yeld mares, born before 1928	5	
Extra Stock	1	
88. Three-year-old yeld mares or fillies	11	
89. Two-year-old fillies	13	
90. One-year-old fillies	24	
91. Foal, colt or filly, born on or after 1st January 1931	13	
92. Groups	1	
93. Groups	5	
94. Groups	7	
	—	96

Shire.

95.	Entire Colt, born in 1928 or 1929	4	
96.	Geldings, born in or before 1928	3	
97.	Filly, born in 1928 or 1929	3	
		—	10

Suffolk.

98.	Geldings, born in or before 1928	5	
99.	Yeld mares or fillies, born before 1930	1	
		—	6

Hunters.

100.	Hunter brood mares, with foal at foot	6	
101.	Geldings, born in 1928	4	
102.	Fillies, born in 1928	5	
103.	Geldings, born in 1929	13	
104.	Fillies, born in 1929	9	
105.	Colts or geldings, born in 1930	14	
106.	Fillies, born in 1930	8	
107.	Mare or gelding, born before 1927, to carry 14 stone and over, in saddle	3	
108.	Mare or gelding, born before 1927, to carry 13 stone and under 14 stone, in saddle	6	
109.	Mare or gelding, born before 1927, to carry under 13 stone, in saddle	8	
110.	Mare or gelding, born in 1927, to carry 13 stone and over, in saddle	4	
111.	Mare or gelding, born in 1927, to carry under 13 stone, in saddle	3	
112.	Hack of hunter type, born before 1928, 15·2 hands and under, in saddle	4	
		—	87

Highland Ponies and Western Island Ponies.

113.	Stallions, born before 1929, over 14 hands and not exceeding 14·2 hands	5	
	Extra Stock	2	
114.	Stallions, born before 1929, not exceeding 14 hands	3	
	Extra Stock	3	
115.	Mares, born before 1929, over 14 hands and not exceeding 14·2 hands, yeld or with foal at foot	6	
	Extra Stock	1	
116.	Mares, born before 1929, not exceeding 14 hands, yeld or with foal at foot	8	
	Extra Stock	2	
117.	Entire colts, born on or after 1st January 1929, not exceeding 14·2 hands	2	
118.	Fillies, born on or after 1st January 1929, not exceeding 14·2 hands	5	
119.	Geldings, born before 1929, not exceeding 14·2 hands	6	
		—	43

Shetland Ponies.

120.	Stallions, not exceeding 10½ hands, born before 1928	5	
121.	Entire colts, not exceeding 10½ hands, born in 1928 or 1929	4	
122.	Mares, not exceeding 10½ hands, with foal at foot	6	
123.	Yeld mares, not exceeding 10½ hands	7	
124.	Fillies, not exceeding 10½ hands, born in 1928 or 1929	4	
125.	Geldings, not exceeding 10½ hands, born before 1929	1	
		—	27

RIDING PONIES.

126.	Mares or geldings, any age, over 13·2 hands and not exceeding 14·2 hands, in saddle	5	
127.	Mares or geldings, any age, over 12·2 hands and not exceeding 13·2 hands, in saddle	4	
128.	Mares or geldings, any age, not exceeding 12·2 hands, in saddle	5	14

HORSES IN HARNESS.

129.	Yeld mares, fillies, or geldings, any age, in harness, exceeding 15 hands, to be driven in the ring	2	
130.	Yeld mares, fillies, or geldings, any age, in harness, over 14 hands, and not exceeding 15 hands, to be driven in the ring	2	
131.	Yeld mares, fillies, or geldings, any age, not exceeding 14 hands, to be driven in the ring	4	8

DRAUGHT GELDING IN HARNESS.

132.	Geldings, any age, in harness, shown in cart or lorry	6	
			389

JUMPING.

1.	Horses or ponies, any height	35	
2.	Horses or ponies, any height	30	
3.	Horses or ponies, any height—handicap	35	
4.	Horses or ponies, any height	38	
5.	Horses or ponies, any height—handicap	37	175

SHEEP.

BLACKFACE.

133.	Tups three shear and over	12	
134.	Tups two shear	15	
135.	Shearling tups	31	
136.	Tup lambs	17	
137.	Ewes above one shear (unclipped), with lamb at foot	23	
138.	Shearling ewes or gimmers	20	
139.	Ewe lambs	17	
140.	Groups	8	143

CHEVIOT.

141.	Tups above one shear	23	
142.	Shearling tups	36	
143.	Tup lambs	23	
144.	Ewes above one shear, with lamb at foot	22	
145.	Shearling ewes or gimmers	27	
146.	Ewe lambs	20	
147.	Groups	11	162

Border Leicester.

148. Tups above one shear	12	
149. Shearling tups	21	
150. Tup lambs	26	
151. Ewes above one shear	12	
Extra stock	1	
152. Shearling ewes or gimmers	14	
153. Ewe lambs	21	
154. Greups	6	
	—	113

Half-bred.

155. Shearling tups	11	
156. Ewes above one shear	8	
157. Shearling ewes or gimmers	15	
158. Ewe lambs	11	
	—	45

Oxford Down.

159. Shearling tups	9	
160. Shearling ewes or gimmers	8	
161. Tup lambs	11	
162. Ewe lambs	11	
	—	39

Suffolk.

163. Tups, one shear and over	13
164. Shearling ewes or gimmers	19
165. Tup lambs	22
166. Ewe lambs	22

Shropshire.

167. Tups, one shear and over	8	
168. Ewes or gimmers	6	
169. Tup lamps	8	
	—	22

Dorset Horn.

170. Tups, any age	5	
171. Ewes or gimmers	8	
172. Ewe lambs	8	
	—	21

Leicester.

173. Shearling tups	4	
174. Shearling ewes or gimmers	4	
175. Tup lambs	5	
	—	13

Wensleydale Longwool.

176.	Tups above one shear	4	
177.	Shearling tups	5	
178.	Shearling ewes or gimmers	6	
		—	15

Hampshire Down.

179.	Shearling tups	5	
180.	Tup lambs	7	
181.	Ewe lambs	6	
		—	18

Fat Sheep.

182.	Three fat lambs, any breed or cross, dropped in the year of the Show	11	
183.	Three fat lambs, any cross, out of half-bred ewes, dropped in the year of the Show	4	
		—	15
	Lonk Sheep (For Exhibition only)		2
			684

GOATS.

184.	Female goats, Toggenburg, British Toggenburg, or British Alpine, in milk	7	
185.	Female goats, Saanen, or British Saanen, in milk	3	
186.	Female goats, any other variety, in milk	7	
187.	Goatlings, Toggenburg, British Toggenburg, or British Alpine, over one but not exceeding two years	3	
188.	Goatlings, any variety, over one but not exceeding two years	9	
189.	Female kids, any variety, not exceeding one year	8	
190.	Male kids, any variety, not exceeding one year	10	
		—	47

Milking Competitions.

191.	For quality, open to Classes 184 and 186 (15)	...	
192.	For quantity, open to Classes 184 and 186 (15)	...	
		—	...
			47

PIGS.

Large White.

193.	Boars born before 1930	4	
194.	Boars born in 1930, before 1st July	5	
195.	Boars born in 1930, on or after 1st July	6	
196.	Boars born in 1931	5	
197.	Sows born before 1930	6	
198.	Sows born in 1930, before 1st July	9	
199.	Sows born in 1930, on or after 1st July	6	
200.	Sows born in 1931	9	
		—	50

MIDDLE WHITE.

201. Boars born before 1931	3	
202. Boars born in 1931	5	
203. Sows born before 1930	4	
204. Sows born in 1930	2	
205. Sows born in 1931	5	
	—	19

LARGE BLACK.

206. Boars born before 1931	7	
207. Boars born in 1931	8	
208. Sows born before 1930	9	
209. Sows born in 1930	8	
210. Sows born in 1931	7	
	—	39

(FOR EXHIBITION ONLY.)

Berkshires	3	
Tamworths	3	
Wessex Saddlebacks	3	
	—	9
		117

POULTRY.

1–130. Poultry	644

EGGS.

1-4. Eggs	40

FUR-PRODUCING RABBITS.

1–19. Rabbits	125

HONEY, &c.

OPEN CLASSES.

1. Collection of appliances suitable for a beginner's outfit for bee-keeping	5
2. Best and most complete frame hive for general use, with any improvements. Unpainted	7
3. Best and most complete hive. Unpainted. Price not to exceed 35s.	6
4. Six sections of comb honey, excluding heather honey	7
5. Six sections of heather honey	7
6. Six jars of run or extracted light-coloured honey, approximate weight 6 lb.	10
7. Six jars of run or extracted medium or dark-coloured honey, excluding heather honey, approximate weight 6 lb.	5

8.	Six jars of pressed heather honey in liquid form, approximate weight 6 lb.	9	
9.	Six jars of granulated honey, approximate weight 6 lb.	12	
10.	Two shallow frames of comb honey for extracting purposes	5	
11.	Products made with the aid of honey	2	
12.	Best display of honey in any form suitable for a shop window in space 4 feet by 4 feet; weight of honey not to exceed 40 lb.	3	
13.	Best exhibit of not less than 1 lb. of wax in any form	10	
14.	Best exhibit of not less than 1 lb. of wax made into shapes for retail trade and over-counter trade	8	
15.	Observatory hive with queen and bees—two or more frames	3	
16.	Observatory hive with queen and bees—one frame, no super	2	
		—	101

CONFINED TO SCOTTISH EXHIBITORS.

17.	One standard frame of comb honey for extracting purposes		
18.	Six sections of comb honey, excluding heather honey	9	
19.	Six sections of heather honey	7	
20.	Six jars of run or extracted medium or dark-coloured honey, excluding heather honey, approximate weight 6 lb.	10	
21.	Six jars of run or extracted light-coloured honey, approximate weight 6 lb.	13	
		—	42
			143

DAIRY PRODUCE.

1.	Powdered butter, not less than 3 lb.	11	
2.	Fresh butter, three 1-lb. rolls	12	
3.	Cheddar cheese, 56 lb. and upwards	14	
4.	Cheese, 14 lb. and under	12	
		—	49

WOOL.

PURE BREED CLASSES.

1.	Blackface ewe	7	
2.	Blackface hogg	7	
3.	Cheviot ewe	4	
4.	Cheviot hogg	4	
5.	Border Leicester ewe	2	
6.	Border Leicester hogg	2	
7.	Half-bred ewe	4	
8.	Half-bred hogg	4	
9.	Oxford Down ewe	3	
10.	Oxford Down hogg	3	
11.	Suffolk ewe	4	
12.	Suffolk hogg	4	
13.	Dorset horn ewe	3	
14.	Dorset horn lamb	1	
15.	Shetland ewe	7	
16.	Shetland hogg	6	
		—	65

RURAL INDUSTRIES.

1-25	551

HORSE-SHOEING.

1 and 2	87

SHOE-MAKING COMPETITION.

1	67

LIVE STOCK JUDGING.

Open to persons not exceeding 23 years of age.	113

BUTTERMAKING COMPETITION.

1-10	125

ABSTRACT.

1.	Cattle	635
2.	Horses	389
3.	Jumping	175
4.	Sheep	684
5.	Goats	47
6.	Pigs	117
7.	Poultry	644
8.	Eggs	40
9.	Fur-Producing Rabbits	125
10.	Honey, &c.	143
11.	Dairy Produce	49
12.	Wool	65
13.	Rural Industries	551
14.	Horse-Shoeing	87
15.	Shoe-Making Competition	67
16.	Live Stock Judging	113
17.	Buttermaking Competition	125
		4056

The following table gives a comparative view of the entries of cattle, horses, sheep, goats, pigs, poultry, eggs, rabbits, honey, dairy produce, wool, rural industries, &c., and implements, of the value of the premiums offered, and of the receipts at the entrance-gates, grand stands, and for catalogues at the Shows which have been held in the Edinburgh Show Division :—

Year.	Cattle.	Horses.	Sheep.	Goats.	Pigs.	Poultry.	Eggs.	Rabbits.	Honey, &c.	Dairy Produce.	Wool.	Rural Industries.	Horse-Shoeing.	Live Stock Judging.	Butter-making.	Imple-ments.	Premiums.	Drawings at Show.
1822	58	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	£78	£51
1823	44	..	8	..	5	..	..	..	..	..	..	..	..	..	..	..	110	75
1824	62	..	8	..	2	..	..	..	..	..	..	..	..	..	..	30	105	59
1825	42	..	6	..	4	..	..	..	..	..	..	..	..	..	..	20	110	80
1827	44	..	24	..	6	..	..	..	..	..	..	..	..	..	..	50	224	83
1842	295	179	175	..	29	..	..	..	..	38	13	..	..	..	..	200	1200	1,373
1848	351	142	325	..	50	64	..	..	..	165	..		..	..	..	310	1153	1,398
1859	332	188	288	..	54	109	..	..	..	54	..	..	..	..	..	980	1500	2,343
1869	310	212	340	..	22	239	..	..	..	..	..	..	..	..	..	1900	1600	4,078
1877	339	342	305	..	30	234	..	..	..	..	..	..	..	..	..	2292	2714	6,734
1884	580	453	493	..	35	253	..	..	..	104	..	..	..	..	..	2282	4343	6,548
1893	380	349	294	..	31	360	..	..	..	88	..	..	..	..	..	2268	2600	4,918
1899	386	518	477	..	46	551	..	..	..	44	14	..	..	..	..	2585	3845	10,231
1907	363	464	352	..	58	605	..	..	..	93	..	..	..	..	..	2140	3613	7,588
1919	215	301	221	60	43	398	..	..	35	48	49	..	..	..	..	1605	4517	17,377
1927	462	357	493	63	201	724	..	184	150	87	75	489	88	56	..	2874	6049	12,315
1931	635	389	684	47	117	644	40	125	143	49	65	551	154	113	125	2991	9608	12,478

A COMPARISON.

The following figures relating to some of the most successful Shows the Society has held will be perused with interest :—

	Cattle.	Horses.	Sheep.	Goats.	Pigs.	Poultry.	Rabbits.	Total Live Stock.	Imple-ments.	Premiums.	Drawings at Show.	Profit.
Glasgow, 1867 .	286	212	257	..	58	150	..	963	1344	£1600	£3,005	£1307
Edinburgh, 1869	310	212	340	..	22	239	..	1123	1900	1600	4,078	2067
Glasgow, 1875 .	411	405	296	..	48	479	..	1639	2220	2665	6,231	3316
Edinburgh, 1877	339	342	305	..	30	234	..	1250	2292	2714	6,734	3710
Edinburgh, 1884	580	453	493	..	35	253	..	1814	2282	4343	6,548	1855
Edinburgh, 1893	380	349	294	..	31	360	..	1414	2268	2600	4,918	2323
Aberdeen, 1894 .	314	324	184	..	34	365	..	1221	2532	2440	5,121	1678
Perth, 1896 .	292	258	204	..	20	374	..	1148	1945	2205	4,788	2511
Glasgow, 1897 .	317	350	245	..	30	275	..	1217	2227	2897	4,392	2021
Edinburgh, 1899	386	518	477	..	46	551	..	1978	2585	3844	10,285	3911
Stirling, 1900 .	321	288	369	..	28	457	..	1463	2095	2915	4,305	1078
Inverness, 1901 .	360	257	204	..	22	499	..	1340	1460	2806	2,485	99
Aberdeen, 1902 .	330	253	243	..	42	475	..	1343	1988	2796	4,413	1604
Perth, 1904 .	348	315	288	..	35	413	..	1394	1972	3058	4,993	1828
Glasgow, 1905 .	310	462	284	..	60	534	..	1750	1875	3702	4,473	1208
Peebles, 1906 .	253	258	291	..	40	438	..	1280	1658	3072	2,596	416
Edinburgh, 1907	363	464	352	..	58	605	..	1842	2140	3614	7,061	2309
Aberdeen, 1908 .	331	299	237	..	42	509	..	1418	1931	3045	4,596	1881
Stirling, 1909 .	330	355	249	..	54	539	..	1527	1977	3017	4,638	1100
Dumfries, 1910	270	355	295	..	54	481	..	1455	1950	3057	3,411	562
Paisley, 1913 .	408	472	334	..	48	586	..	1798	1968	5109	6,468	2527
Edinburgh, 1919	215	301	221	60	43	398	..	1238	1605	4517	17,377	3275
Aberdeen, 1920 .	340	250	279	19	112	597	..	1597	2065	4608	14,120	1679
Stirling, 1921 .	367	279	299	59	188	582	..	1774	2201	5055	12,822	2350
Dumfries, 1922 .	422	272	339	41	229	588	..	1891	2156	5488	11,428	1090
Perth, 1924 .	406	283	366	21	202	760	..	2038	2382	5712	10,758	2811
Glasgow, 1925 .	461	340	349	31	178	577	178	2114	2570	6136	12,865	4226
Kelso, 1926 .	430	284	597	31	159	546	108	2155	2366	6004	9,218	324
Edinburgh, 1927	462	357	493	63	201	724	184	2484	2874	6049	12,315	2090
Aberdeen, 1928 .	421	277	349	25	80	578	120	1850	2377	6131	11,031	1882
Edinburgh, 1931	635	389	684	47	117	644	125	2641	2991	9608	12,478	704

HORSES.

The total entry of Horses, 389, was the largest since the War, and it was generally conceded that a better display had rarely been seen at a Highland Show.

With an entry of 188, Clydesdales were well represented. Many former prize-winning animals were present, and there is no doubt that the Clydesdales, both in the Judging ring and in the Parade ring, were an impressive sight.

In the male section, aged stallions were not numerous, but colts, especially yearlings, were exceptionally strong. Messrs John Johnston & Son, Dunmore Home Farm, Falkirk, secured the Prince of Wales Champion Gold Medal for best Clydesdale Stallion or Colt, and the Cawdor Challenge Cup for males, with their beautiful brown three-year-old colt "Dunmore Supreme," 21,753 (Fig. 21). This animal, bred by Mr William Meiklem, Bennochy Park, Kirkcaldy, was sired by "Woodbank Majestic," 21,393, out of "Maud of Begg," 50,902. The reserve for the Championship was the noted two-year-old colt "Craigie Beau Ideal," 21,856, belonging to Mr James Kilpatrick, Craigie Mains, Kilmarnock. He was bred by Messrs Robert Bryan & Sons, Barskimming Mains, Mauchline, who were awarded the William Taylor Memorial Prize offered to the breeder of best colt not exceeding two years old.

Out of a fine show of Clydesdale Geldings, the Cleansing Department of the Corporation of Glasgow was successful in obtaining the Championship with their four-year-old bay gelding "St Mungo" (Fig. 22). He was bred by Mr John Ross, Mains of Ballotorinch, Carron, Moray, his sire being "Dandaleith Quintin," 19,082. In addition to the Prince of Wales Champion Gold Medal this animal was also awarded the Meiklem Gold Challenge Cup.

The classes for Mares and Fillies were also well filled, and not for many years has there been seen such a splendid display of Clydesdale females. After exceptionally keen competition the Prince of Wales Champion Gold Medal, the Fife and Kinross Perpetual Gold Challenge Cup and the Cawdor Challenge Cup for Females, were won by "Onoway" (Fig. 23), a grand three-year-old bay filly, of perfect action, the property of Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire. She was bred by Mr John Barbour, Leaths, Castle Douglas, her sire being "Benefactor," 20,867, and dam "Bonny of Auchneight," 51,798. The Reserve Champion was the well-known "Brunstane Phyllis," a beautiful six-year-old mare exhibited by Mr Robert Park, Brunstane, Portobello, and bred by Mr R. M. Leslie, Murroes, Arbroath.

To mark the holding of the Hundredth Show, classes were introduced for Clydesdale Groups. These were judged on the Wednesday, and proved to be an interesting addition to the Clydesdale section.

Shires were disappointing in numbers, but some good specimens of the breed were on view. It is noteworthy that on this occasion they were judged by a Clydesdale judge. "Theale Abbess," 123,425 (Fig. 24), a weighty three-year-old filly, secured the Championship. Exhibited by Mr William J. Cumber, Theale, Reading, and bred by Mr H. W. T. Smith, Rectory Farm, Fenny Compton, Leamington Spa, she was got by "Old Leys Record," 38,938, out of "Farnborough Friar Queen."

Suffolks were also weak numerically. Although classes were provided for mares and geldings, only five geldings were forward. The Prince of Wales Champion Silver Medal was obtained by Mr A. Nunn Scarfe, The Brooks, Bildeston, Ipswich, with his four-year-old chestnut gelding "Punch" (Fig. 25), bred by Messrs G. A. Woodward & Son, Old Newton, Stowmarket. His sire was "Blyford Seabroc," 5467, and dam "Mendlesham Diana," 9186.

With a total entry of 84, with few absentees, there was an excellent show of Hunters, especially in the classes for young stock. Brig.-General R. Cheape, C.M.G., D.S.O., M.C., of Wellfield, Gateside, Fife, gained the Prince of Wales Champion Gold Medal with "Priory Lass" (Fig. 26). This handsome three-year-old brown filly, sired by "Warrington" and bred by Mrs Brook, Marton Priory, Stillington, York, also won the Dumfries Centenary Silver Challenge Cup and the Hunters Improvement Society's Gold Medal for the best Hunter filly not exceeding three years old. The reserve for championship honours was "Billy Dear II.," an eight-year-old gelding, the property of Mr Andrew Dunn, Redden, Kelso.

Highland and Western Island Ponies, with an entry of 43—more than double that of the previous year's show at Dumfries—gave a much better competitive exhibition than has been seen for a considerable number of years. The Prince of Wales Champion Gold Medal was awarded to the nineteen-year-old "extra stock" mare "Lady Phœnix," 3376 (Fig. 27), which, despite her age, was shown in fine condition. The property of Miss Lilian Elford, Rosehaugh, Avoch, Ross-shire, she was bred by the late Mr J. Douglas Fletcher of Rosehaugh, her sire being "Glenbruar," 331, and dam "Phœnix," 2150. "Lady Phœnix" was also awarded the Highland Pony Society's special prize for best pony not exceeding 14 hands; the corresponding prize given by the National Pony Society for best pony over 14 hands and not exceeding 14·2 hands went to the reserve champion "Faillie Diamond," 1475, an eight-year-old stallion, exhibited and bred by the Department of Agriculture for Scotland.

Entries of Shetland Ponies were less than anticipated, but there were sufficient in the Showyard to provide a pleasing exhibit. Both the Supreme Champion and Reserve Champion animals were the property of the same exhibitor—Mr R. W. R. Mackenzie, Carpow, Newburgh, Fife. The winner of the Prince of Wales Champion Gold Medal was "Lord George," 1264 (Fig. 28), a splendid five-year-old black stallion. He was sired by "Max of Middlebank," 875, out of "Lady Grace of Woodlea," 4483, and bred by the late Mr William Mathewson, Middlebank, Dunfermline. The reserve champion animal was a home-bred three-year-old filly, "Elder Flower 2nd of Earlshall."

Riding Ponies, with 14 entries in the three classes, were an added attraction in the Parade ring.

Horses in Harness were weak in numbers. The Prince of Wales Champion Gold Medal went to "Clyde Masque," 26,430 (Fig. 29), a stylish ten-year-old brown mare owned by Mr Walter Macmillan, Mambeg House, Garelochhead. The breeder was Mr James H. Chassels, Maxwell Drive, Pollokshields, Glasgow, her sire being "Harviestoun Mascot," 12,858, and dam "Sweet Kitten," 20,269.

In the class for Draught Geldings in Harness six animals were entered, and these were judged and paraded on the last day of the Show. The First Prize was awarded to Messrs Bruce Lindsay Brothers Ltd., 8 John's Place, Leith, for their six-year-old black gelding "Jamie."

Horses entered for Jumping were more numerous than in previous years, and these competitions, as usual, were a source of great interest.

As an additional attraction, the 16/5th Lancers were engaged to give military displays following the jumping each afternoon and evening. This departure proved highly successful, and the displays were thoroughly enjoyed by the many visitors to the Show.

The sections for Poultry, Rabbits, Dairy Produce, Honey, Wool and Rural Industries, were well supported with entries, and many exhibits of high merit were on view. Classes were provided for the first time for eggs, and these obtained a gratifying entry.

With an extra class for Shoe-making, the Horse-Shoeing Competitions extended over three days instead of two as formerly. These competitions continued to be very popular, great interest being taken in the excellent work of the many competitors.

The inclusion of a Horticultural Section was fully justified by the number of entries, and by the excellent quality of the many exhibits. Covered shedding, erected in the form of a rectangle, housed the exhibits of flowers, plants, &c., while the open space was occupied by Formal or Rock Gardens. The whole made an attractive display, and the general public, who were given free admission, greatly appreciated this addition to the Show.

One other new feature was the Buttermaking Competitions. These received such a large entry that it was found necessary to spread the competitions over the four days. In the Championship Class, first place was secured by Miss Sybil E. Jones, Cwm, Crickhowell, Breconshire, who was awarded a Prince of Wales Champion Gold Medal. Miss Jenny W. Prentice, Craigrie, Clackmannan, as runner up, received a Prince of Wales Silver Medal.

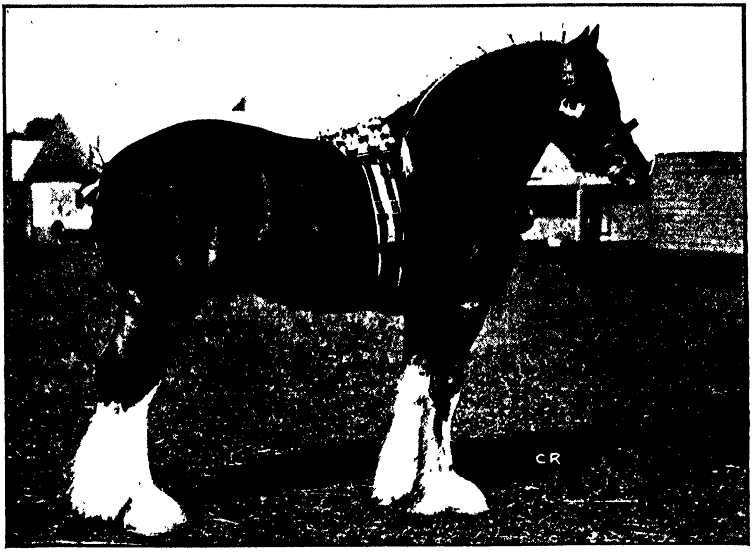

Fig. 21.—CLYDESDALE ENTIRE COLT, "DUNMORE SUPREME" 21,753.

Winner of the Prince of Wales Champion Gold Medal for best Clydesdale Stallion or Colt, Hundredth Show, Edinburgh, 1931. The property of Messrs John Johnston & Son, Dunmore Home Farm, Falkirk. Bred by Mr William Meiklem, Bennochy Park, Kirkcaldy. Age three years and two months.

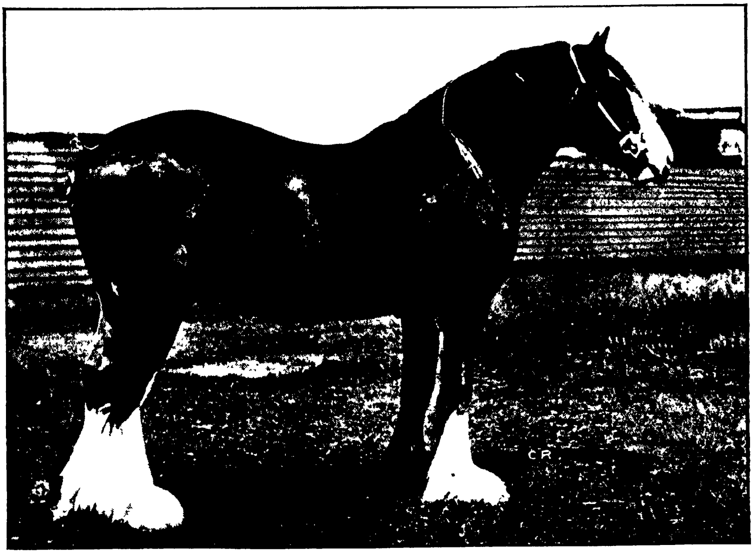

Fig. 22.—CLYDESDALE GELDING, "ST MUNGO."

Winner of the Prince of Wales Champion Gold Medal for best Clydesdale Gelding, Hundredth Show, Edinburgh, 1931. The property of The Corporation of Glasgow (Cleansing Department), 20 Trongate, Glasgow. Bred by Mr John Ross, Mains of Ballotorinch, Carron, Moray. Age four years.

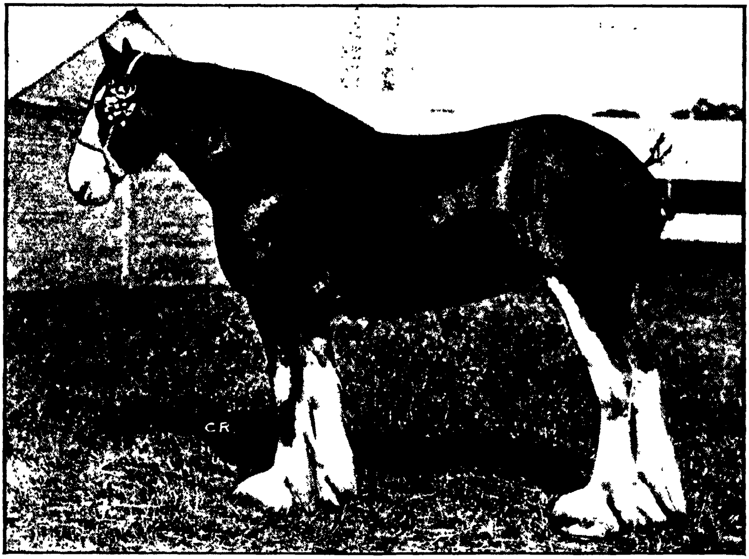

Fig. 23.—Clydesdale Mare, "Onoway."

Winner of the Prince of Wales Champion Gold Medal for best Clydesdale Mare or Filly, Hundredth Show, Edinburgh, 1931. The property of Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire. Bred by Mr John Barbour, Leaths, Castle Douglas. Age three years and one month.

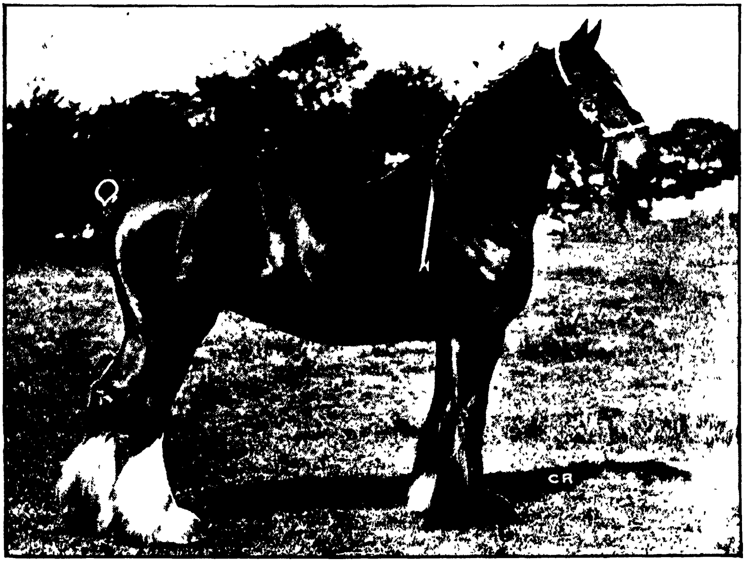

Fig. 24.—Shire Filly, "Theale Abbess" 123,425.

Winner of the Prince of Wales Champion Silver Medal for best Shire animal, Hundredth Show, Edinburgh, 1931. The property of Mr William John Cumber, Theale, Reading. Bred by Mr H. W. T. Smith, Rectory Farm, Fenny Compton, Leamington Spa. Age three years.

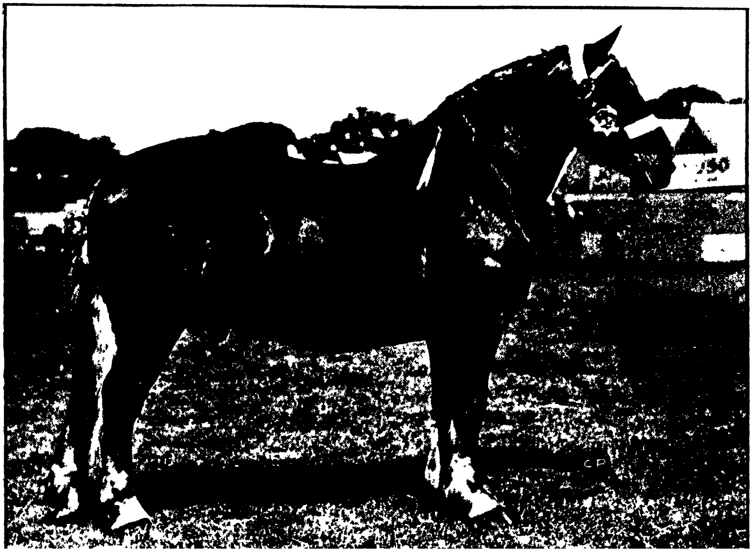

Fig. 25.—Suffolk Gelding, "Punch."

Winner of the Prince of Wales Champion Silver Medal for best Suffolk animal, Hundredth Show, Edinburgh, 1931. The property of Mr A. Nunn Scarfe, The Brooks, Bildeston, Ipswich. Bred by Messrs G. A. Woodward & Son, Old Newton, Stowmarket Age four years.

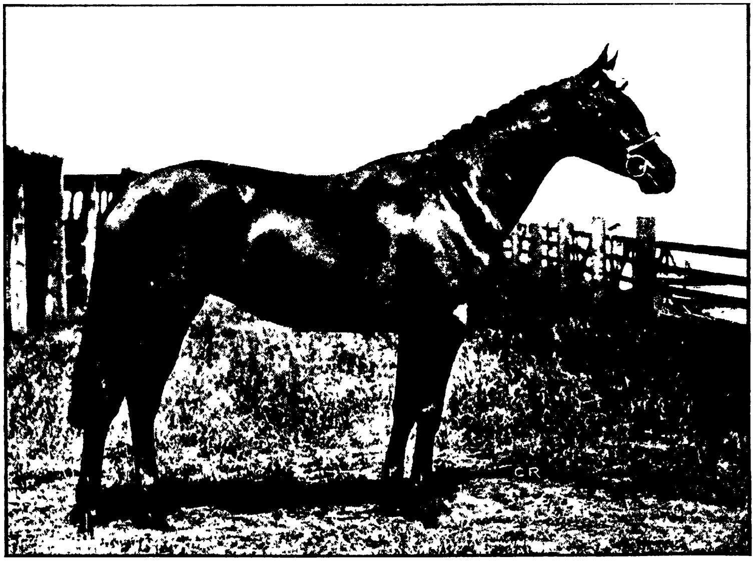

Fig. 26.—Hunter Filly, "Priory Lass."

Winner of the Prince of Wales Champion Gold Medal for best Hunter, Hundredth Show, Edinburgh, 1931. The property of Brig.-General R. Cheape, C.M.G., D.S.O., M.C., of Wellfield, Gateside, Fife. Bred by Mis Brook, Marton Priory, Stillington, York. Age three years and one month.

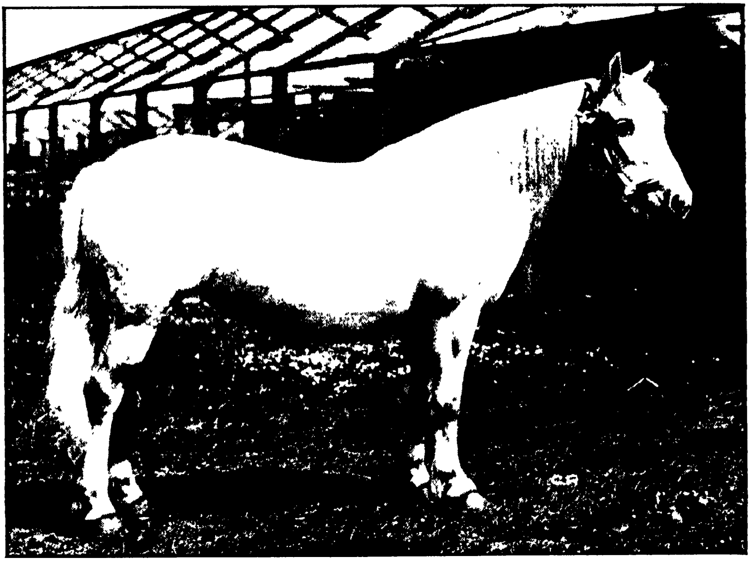

Fig. 27.—Western Island Pony Mare, "Lady Phœnix" 3376.

Winner of the Prince of Wales Champion Gold Medal for best Highland or Western Island Pony, Hundredth Show, Edinburgh, 1931. The property of Miss Lilian Elford, Rosehaugh, Avoch, Ross-shire. Bred by the late Mr J. Douglas Fletcher, Rosehaugh, Avoch, Ross-shire. Age nineteen years.

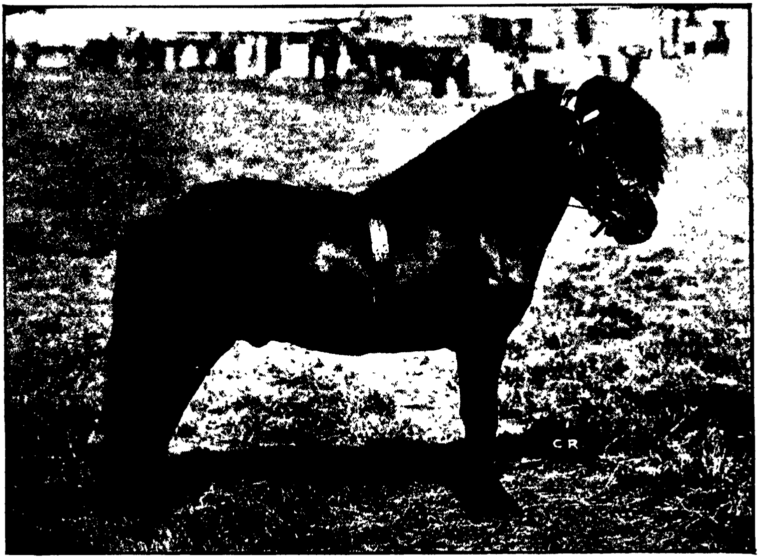

Fig. 28.—Shetland Pony Stallion, "Lord George" 1264.

Winner of the Prince of Wales Champion Gold Medal for best Shetland Pony, Hundredth Show, Edinburgh, 1931. The property of Mr R. W. R. Mackenzie, Carpow, Newburgh, Fife. Bred by the late Mr William Mathewson, Middlebank, Dunfermline. Age five years and one month.

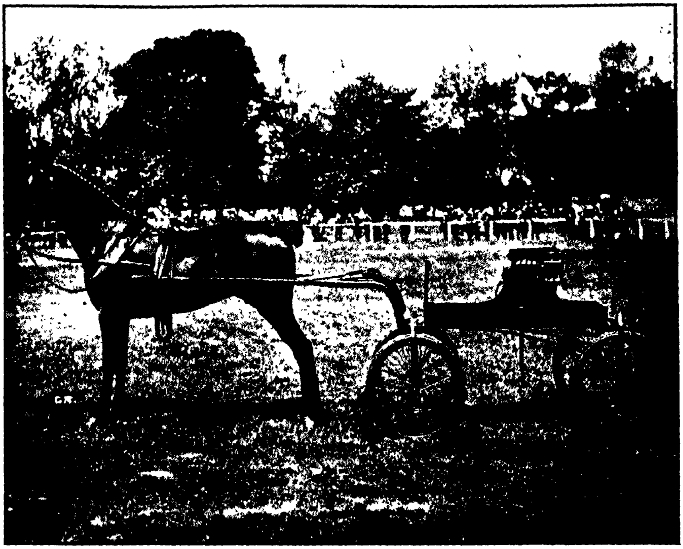

Fig. 29.—MARE IN HARNESS, "CLYDE MASQUE" 26,430.

Winner of the Prince of Wales Champion Gold Medal for best animal in the Classes for Horses in Harness, Hundredth Show, Edinburgh, 1931. The property of Mr Walter Macmillan, Mambeg House, Mambeg, Garelochhead. Bred by Mr James H. Chassels, Maxwell Drive, Pollokshields, Glasgow. Age ten years.

PREMIUMS AWARDED BY THE SOCIETY IN 1931.

HUNDREDTH SHOW—EDINBURGH.

23rd, 24th, 25th, and 26th June 1931.

ABBREVIATIONS.—V., *Very Highly Commended.* H., *Highly Commended.* C., *Commended.*

HORSES

CLYDESDALE STALLION AND COLT.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Clydesdale Stallion or Colt.

No. 650 Johnston, John, & Son, Dunmore Home Farm, Falkirk, " Dunmore Supreme " (21,753).

Reserve—No. 666 Kilpatrick, James, Craigie Mains, Kilmarnock, " Craigie Beau Ideal " (21,856).

Cawdor Challenge Cup, value 50 Guineas, *for best Clydesdale Stallion or Colt registered in the Clydesdale Stud-Book*—given by the Clydesdale Horse Society.

No. 650 Johnston, John, & Son, Dunmore Home Farm, Falkirk, " Dunmore Supreme " (21,753).

Breeder of best Male Animal of any age in Classes 78 *to* 81—The Silver Medal.

No. 650 William Meiklem, Bennochy Park, Kirkcaldy.

CLASS 78. STALLION, born before 1928.—PREMIUMS, £25, £20, £12, £6, and £2.

1st No. 636 Adams, David, Auchencraig, Dumbarton, " Satisfaction " (21,293).
2nd No. 637 Chapman, R. & J., Johnston, Gartcosh, " Dupplin Castle " (20,747).
3rd No. 643 Templeton, T. & M., Sandyknowe, Kelso, " Beneficent " (21,572).

CLASS 79. ENTIRE COLT, born in 1928.—PREMIUMS, £25, £20, £12, £6, and £2.

1st No. 650 Johnston, John, & Son, Dunmore Home Farm, Falkirk, "Dunmore Supreme" (21,753).

2nd No. 656 Templeton, T. & M., Sandyknowe, Kelso, "Benefaction" (21,712).

3rd No. 657 Templeton, T. & M., Sandyknowe, Kelso, "Baronet" (21,709).

4th No. 659 Wyllie, Scott, Milton of Luncarty, Perth, "Milton Ideal" (21,780).

5th No. 651 Johnston, John, & Son, Dunmore Home Farm, Falkirk, "Dunmore Again" (21,871).

V No. 658 Walker, Robert, Langlands, Kilmaurs, "Worthiness" (21,827).

H No. 654 Sharp, T. Mercer, Bardrill, Blackford, "Fyvie Eclipse" (21,758).

C No. 645 Brown, Samuel, Culraven, Borgue, Kirkcudbright, "Culraven Concord" (21,741).

C No. 655 Simpson, A. M., Whitecross, East Kilbride, "Altus Gradus" (21,832)

William Taylor Memorial Prize of £10 and Certificate *to the breeder of the best Clydesdale Colt entered in Classes* 80 *and* 81—given by William Taylor Memorial Committee.

No. 666 Robert Bryan & Sons, Barskimming Mains, Mauchline.

CLASS 80. ENTIRE COLT, born in 1929.—PREMIUMS, £25, £20, £12, £6, and £2.

1st No. 666 Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigie Beau Ideal" (21,856).

2nd No. 665 Hamilton, James, Dunduff, Dunure, Ayr, "Dunduff Knight" (21,866).

3rd No. 661 Clark, James, Windlaw, Carmunnock, "Windlaw Marcellus" (21,934).

4th No. 672 Templeton, T. & M., Sandyknowe, Kelso, "Benedictine" (21,836).

5th No. 674 Templeton, T. & M., Sandyknowe, Kelso, "Royal Gift" (21,914).

V No. 671 Templeton, T. & M., Sandyknowe, Kelso, "Black Diamond" (21,838).

H No. 664 Gibb, James, Lochtyside, Thornton, Fife, "Lochty Microscope" (21,896).

C No. 662 Clark, Thomas, Muirtons, Perth, "Royal Sunlight" (21,915).

C No. 669 Sommerville, R. & A., Wester Cowden, Dalkeith, "Cowden Advance" (21,854).

CLASS 81. ENTIRE COLT, born in 1930.—PREMIUMS, £20, £15, £6, £4, and £2.

1st	No. 683	Kilpatrick, James, Craigie Mains, Kilmarnock.
2nd	No. 701	Templeton, T. & M., Sandyknowe, Kelso, " The Factor."
3rd	No. 686	Kilpatrick, James, Craigie Mains, Kilmarnock.
4th	No. 700	Templeton, T. & M., Sandyknowe, Kelso, " Fyvie Topsman."
5th	No. 691	Reith, Miss E. M., Kennerty Farm, Peterculter, " Remount."
V	No. 682	Graham, George, & Son, Faraway Farm, Kippen, " Dhunur Larg."
H	No. 689	Reith, Miss E. M., Kennerty Farm, Peterculter, " Resound."
C	No. 694	Sharp, T. Mercer, Bardrill, Blackford, " Bardrill Sunshine."

CLYDESDALE GELDING.

Got by a Registered Clydesdale Stallion.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Clydesdale Gelding.

No. 704 Glasgow, The Corporation of (Cleansing Department), 20 Trongate, Glasgow, " St Mungo."

Reserve—No. 702 Campbell, G. & J., Gartness, Balfron, " Hector."

The Meiklem Gold Challenge Cup, valued 110 Guineas, *for best Clydesdale Gelding, " Extra Stock " eligible to compete.* Given by Mr William Meiklem, Bennochy Park, Kirkcaldy.

No. 704 Glasgow, The Corporation of (Cleansing Department), 20 Trongate, Glasgow, " St Mungo."

Reserve—No. 702 Campbell, G. & J., Gartness, Balfron, " Hector."

CLASS 82. GELDING, born before 1928.—PREMIUMS, £20, £12, £8, £4, and £2.

1st	No. 704	Glasgow, The Corporation of (Cleansing Department), 20 Trongate, Glasgow, " St Mungo."
2nd	No. 702	Campbell, G. & J., Gartness, Balfron, " Hector."
3rd	No. 707	Young, William, West Preston, Preston Mill, Dumfries, " Preston Mark."
4th	No. 706	Young, William, West Preston, Preston Mill, Dumfries, " Preston Willie."
5th	No. 703	Chapman, R. & J., Johnston, Gartcosh, " Stirling Castle."
V	No. 705	M'Connell, James, Boreland, Whauphill, " Jock."

CLASS 83. GELDING, born in 1928.—PREMIUMS, £20, £12, £8, £4, and £2.

1st	No. 712	Clark, James, Windlaw, Carmunnock, " Jim."
2nd	No. 709	Baxter, Thomas, Dolphinstone Farm, Tranent, " Dan."
3rd	No. 711	Campbell, G. & J., Gartness, Balfron, " Dick."
4th	No. 715	Goldie, David, Barassie, Troon, " Willie."
5th	No. 714	Gardner, William, Springfield, Linlithgow, " Spring."
V	No. 713	Crawford, William, Hatton Mains, Kirknewton, " Toby."
H	No. 708	Anderson, Sir Kenneth S., Bart., K.C.M.G., The Yair, Galashiels, " Willie."

CLASS 84. GELDING, born in 1929.—PREMIUMS, £20, £12, £8, £4, and £2.

1st No. 720 Campbell, G. & J., Gartness, Balfron, " Captain."
2nd No. 723 Kerr, John, Shearington, Caerlaverock, Dumfries, " Joe."
3rd No. 724 Kerr, William, Bell Mount, Penrith, " Jamie."
4th No. 718 Adams, David, Auchencraig, Dumbarton, " Dipple."
5th No. 725 Young, William, West Preston, Preston Mill, Dumfries, " Preston Awake."

CLASS 85. GELDING, born in 1930.—PREMIUMS, £12, £8, £4, £2, and £1.

1st No. 727 Sommerville, R. & A., Wester Cowden, Dalkeith, " Wattie."

CLYDESDALE MARE AND FILLY.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Clydesdale Mare of Filly.

No. 756 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, Mare, " Onoway."

Reserve—No. 748 Park, Robert, Brunstane, Portobello, " Brunstane Phyllis."

Fife and Kinross Perpetual Gold Challenge Cup, value £200, *for best Clydesdale Mare or Filly, " Extra Stock " being eligible to compete.* This Cup, along with an endowment of £400, was subscribed for by the Countess of Fife and Kinross in commemoration of the Society's first Show at Cupar-Fife in 1912.

No. 756 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, Mare, " Onoway."

Reserve—No. 748 Park, Robert, Brunstane, Portobello, " Brunstane Phyllis."

Cawdor Challenge Cup, value 50 Guineas, *for best Clydesdale Mare or Filly registered in the Clydesdale Stud-Book*—given by the Clydesdale Horse Society.

No. 756 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, Mare, " Onoway."

CLASS 86. MARE, of any age, with Foal at foot.—PREMIUMS, £25, £15, £10, £4, and £2.

1st No. 730 Cairns, James, Lochmalony, Cupar, " Lochmalony Ella."
2nd No. 741 Park, Robert, Brunstane, Portobello, " Brunstane Brenda."
3rd No. 734 MacLaren, A. & T., Drummore, Doune, " Lady Steel " (58,117).
4th No. 733 Kilpatrick, James, Craigie Mains, Kilmarnock, " Lady Helen."
5th No. 735 Miller, William S., jun., Balmanno Castle, Bridge of Earn, " Balmanno Elsie " (58,177).
V No. 737 Osborne, William F., Pratis, Leven, " Lady Ann."
H No. 736 Miller, William S., jun., Balmanno Castle, Bridge of Earn, " Balmanno Isabel."

CLASS 87. YELD MARE, born before 1928.—PREMIUMS, £20, £12, £8, £4, and £2.

1st No. 745 Kerr, J. E., of Harviestoun, Dollar, " Harviestoun Nadine."
2nd No. 747 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, " Fyvie Primrose."
3rd No. 743 Brown, William Watson, Muirhouse, Stow, " Celanese " (58,411).
4th No. 732 Jack, David, Middleton, Balbeggie, Perth, " Middleton Moss Rose " (57,618).
5th No. 744 Gibb, James, Lochtyside, Thornton, Fife, " Lochtyside Peggy " (55,298).
V No. 746 Martin, John, Letham, Mid-Calder, " Carrie."

EXTRA STOCK.

The following was awarded the Silver Medal:—

No. 748 Park, Robert, Brunstane, Portobello, " Brunstane Phyllis."

CLASS 88. YELD MARE or FILLY, born in 1928.—PREMIUMS, £20, £12, £8, £4, and £2.

1st No. 756 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, Mare, " Onoway."
2nd No. 753 M'Dowall, David, Glenhowl, Glenluce, Mare, " Rose Marie."
3rd No. 751 Kerr, J. E., of Harviestoun, Dollar, Filly, " Harviestoun Babette."
4th No. 749 Baxter, Thomas, Dolphinstone Farm, Tranent, " Lady Majestic."
5th No. 758 Park, Robert, Brunstane, Portobello, Filly, " Brunstane Ruby."
V No. 757 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, Mare, " Owaissa."
H No. 760 Whitelaw, Alexander, of Gartshore and Woodhall, Gartshore, Kirkintilloch, Mare, " Woodhall Meadow Sweet."
C No. 755 Mundell, Mrs, Dalilongart, Sandbank, Argyll, Filly, " Gladys."

CLASS 89. FILLY, born in 1929.—PREMIUMS, £20, £12, £8, £4, and £2.

1st No. 762 Beck, G. M., The Lane, Ravenstonedale, Westmorland, " Lane Lucky Girl."
2nd No. 767 M'Dowall, David, Glenhowl, Glenluce, " Marigold."
3rd No. 773 Templeton, T. & M., Sandyknowe, Kelso, " Rosemary."
4th No. 765 Kerr, J. E., of Harviestoun, Dollar, " Harviestoun Nora."
5th No. 768 Mather, William, Milne Graden, Coldstream, " June."
V No. 764 Elliot, Charles S., Charterhouse, Kelso, " Beauty's Dream."
H No. 763 Cairns, James, Lochmalony, Cupar, " Lochmalony Lily Jane."
C No. 772 Sleigh, Alexander, Mains of Tolquhon, Tarves, " Rettie Kiteena."
C No. 769 Portland, The Duke of, K.G., Ousdale Home Farm, Berriedale, Caithness, " Benefactoress."

CLASS 90. FILLY, born in 1930.—PREMIUMS, £20, £12, £8, £4, and £2.

1st No. 787 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, "Charm."
2nd No. 797 Stewart, William, Dykedale, Dunblane, "Reality."
3rd No. 795 Ross, Errington, Castleheather, Inverness, "Castleheather Ida."
4th No. 782 Dalziel, Robert, Rue, Auldgirth, "Rue Pearl."
5th No. 778 Beck, G. M., The Lane, Ravenstonedale, Westmorland, "Lane Talking Picture."
V No. 776 Barbour, John, Leaths, Castle Douglas, "Lily."
H No. 781 Christie. John H., West Carse, Stirling, "Cathie."

CLYDESDALE FOAL.

CLASS 91. FOAL, COLT or FILLY, born on or after 1st January 1931.—PREMIUMS, £10, £8, £4, £2, and £1.

1st No. 804 Kilpatrick, James, Craigie Mains, Kilmarnock.
2nd No. 805 MacLaren, A. & T., Drummore, Doune.
3rd No. 809 Park, Robert, Brunstanc, Portobello.
4th No. 802 Cairns, James, Lochmalony, Cupar, Fife.
5th No. 807 Osborne, William F., Pratis, Leven.

CLYDESDALE GROUP.

CLASS 92. FAMILY—five two-year-old animals, Colts or Fillies, drawn from Classes 80 and 89, the offspring of one sire, which must be alive at date of entry.—PREMIUMS, £20 and £10.

FIRST PRIZE.

No. 671 Templeton, T. & M., Sandyknowe, Kelso, "Black Diamond" (21,838).
No. 672 Templeton, T. & M., Sandyknowe, Kelso, "Benedictine" (21,836).
No. 674 Templeton, T. & M., Sandyknowe, Kelso, "Royal Gift" (21,914).
No. 762 Beck, G. M., The Lane, Ravenstonedale, Westmorland, "Lane Lucky Girl."
No. 767 M'Dowall, David, Glenhowl, Glenluce, "Marigold."

Large Silver Medal awarded to owner of sire :—

No. 811 Templeton, T. & M., Sandyknowe, Kelso, "Benefactor" (20,867).

CLASS 93. FAMILY—five yearling animals, Colts or Fillies, drawn from Classes 81 and 90, the offspring of one sire, which must be alive at date of entry.—PREMIUMS, £20 and £10.

FIRST PRIZE.

No. 687 Meikle, John P., Pilmuir, Lauder, " Lauderdale."
No. 699 Templeton, T. & M., Sandyknowe, Kelso, " Bentrovato."
No. 700 Templeton, T. & M., Sandyknowe, Kelso, " Fyvie Topsman."
No. 701 Templeton, T. & M., Sandyknowe, Kelso, " The Factor."
No. 778 Beck, G. M., The Lane, Ravenstonedale, Westmorland, " Lane Talking Picture."

SECOND PRIZE.

No. 689 Reith, Miss E. M., Kennerty Farm, Peterculter, " Resound."
No. 691 Reith, Miss E. M., Kennerty Farm, Peterculter, " Remount."
No. 692 Reith, Miss E. M., Kennerty Farm, Peterculter, " Resource."
No. 793 Reith, Miss E. M., Kennerty Farm, Peterculter, " Adaline."
No. 794 Reith, W. & J., Kennerty, Peterculter.

Large Silver Medal awarded to owner of sire :—

No. 816 Templeton, T. & M., Sandyknowe, Kelso, " Benefactor " (20,867).

Medium Silver Medal awarded to owner of sire :—

No. 815 Reith, Miss E. M., Kennerty Farm, Peterculter, " Renown " (21,525).

CLASS 94. GROUP of three animals, drawn from Classes 78, 79, 80, 81. 86, 87, 88, 89 and 90, got by one sire, the sire to be alive at date of entry.—PREMIUMS, £20 and £10.

FIRST PRIZE awarded to—

No. 822 Templeton, T. & M., Sandyknowe, Kelso, " Benefactor " (20,867).

GROUP—

No. 730 Cairns, James, Lochmalony, Cupar, " Lochmalony Ella."
No. 756 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, Mare, " Onoway."
No. 762 Beck, G. M., The Lane, Ravenstonedale, Westmorland, " Lane Lucky Girl."

SECOND PRIZE awarded to—

No. 823 Templeton, T. & M., Sandyknowe, Kelso, ' Benefactor " (20,867).

GROUP—

No. 656 Templeton, T. & M., Sandyknowe, Kelso, " Benefaction " (21,712).
No. 672 Templeton, T. & M., Sandyknowe, Kelso, " Benedictine " (21,836).
No. 701 Templeton, T. & M., Sandyknowe, Kelso, " The Factor."

SHIRE.

PRINCE OF WALES CHAMPION SILVER MEDAL
for best Shire Animal in Classes 95, 96, *and* 97.

No. 832 Cumber, William John, Theale, Reading, Berkshire, " Theale Abbess " (123,425).

Reserve—No. 830 Gilbey, Sir Walter, Bart., The Lodge, Elsenham, Essex, " Clansman."

CLASS 95. ENTIRE COLT, born in 1928 or 1929.—PREMIUMS, £20, £10, £6, and £4.

1st No. 824 Belcher, J. Morris, Tibberton Manor, Wellington, Salop, " Bryntanat " (40,479).
2nd No. 827 Cumber, William John, Theale, Reading, Berkshire, " Theale Lionheart " (40,822).
3rd No. 825 Belcher, J. Morris, Tibberton Manor, Wellington, Salop, " Tibberton Umpire " (40,635).
4th No. 826 Cumber, William John, Theale, Reading, Berkshire, " Theale Hughie " (40,821).

CLASS 96. GELDING, by a registered Shire Stallion, born in or before 1928.—PREMIUMS, £20, £10, £6, and £4.

1st No. 830 Gilbey, Sir Walter, Bart., The Lodge, Elsenham, Essex, " Clansman."
2nd No. 829 Davies, Peter, Gorsefield, West Timperley, Cheshire, " Midlands Prince."
3rd No. 828 Banks, Edward, of Pitteadie, Kirkcaldy, " Felstead."

CLASS 97. FILLY, born in 1928 or 1929.—PREMIUMS, £20, £10, £6, and £4.

1st No. 832 Cumber, William John, Theale, Reading, Berkshire, " Theale Abbess " (123,425).
2nd No. 833 Cumber, William John, Theale, Reading, Berkshire, " Wick Locket " (123,501).
3rd No. 831 Belcher, J. Morris, Tibberton Manor, Wellington, Salop, " Tibberton Ruby " (124,232).

SUFFOLK.

PRINCE OF WALES CHAMPION SILVER MEDAL
for best Suffolk Animal in Classes 98 *and* 99.

No. 835 Scarfe, A. Nunn, The Brooks, Bildeston, Ipswich, " Punch."

Reserve—No. 834 Rich, Mrs Evelyn, Wretham Hall, Thetford, Norfolk, " Peter."

CLASS 98. GELDING, by a registered Suffolk Stallion, born in or before 1928.—PREMIUMS, £20, £10, £6, and £4.

1st	No. 835	Scarfe, A. Nunn, The Brooks, Bildeston, Ipswich, " Punch."
2nd	No. 834	Rich, Mrs Evelyn, Wretham Hall, Thetford, Norfolk, " Peter."
3rd	No. 836	Wray, Sanderson, & Co., Limited, Hull, " Pyrford Prince."
4th	No. 837	Wray, Sanderson, & Co., Limited, Hull, " Briton."
V	No. 838	Wray, Sanderson, & Co., Limited, Hull, " Sharper."

CLASS 99. YELD MARE or FILLY, born before 1930.—PREMIUMS, £20, £10, £6, and £4.

(*Not forward.*)

HUNTERS.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Hunter.

No. 850 Cheape, Brig.-General R., C.M.G., D.S.O., M.C., of Wellfield, Gateside, Fife, " Priory Lass."

Reserve—No. 904 Dunn, Andrew, Redden, Kelso, Gelding, " Billy Dear II."

Dumfries Centenary Silver Challenge Cup, value £100, *for best Hunter. " Extra Stock " not eligible to compete.* Presented by members of the Dumfriesshire Hunt to commemorate the centenary of the Highland Society's first Show at Dumfries in 1830.

No. 850 Cheape, Brig.-General R., C.M.G., D.S.O., M.C., of Wellfield, Gateside, Fife, " Priory Lass."

Special Prizes for Foals shown with their Dams in Class 100—*£8, £5, and £3.*

1st	No. 840	Brook, Captain Edward W., of Kinmount, Annan.
2nd	No. 843	Parsons, Mrs E. H. T., Fordbank, Milliken Park, Renfrewshire.
3rd	No. 842	Harrison, John, Newbiggin House, Stainton, Penrith.

CLASS 100. HUNTER BROOD MARE, with Foal at foot.—PREMIUMS, £20, £10, £5, and £3.

1st	No. 843	Parsons, Mrs E. H. T., Fordbank, Milliken Park, Renfrewshire, " Lady Rockville " (7207).
2nd	No. 842	Harrison, John, Newbiggin House, Stainton, Penrith, " Howdyedo."
3rd	No. 840	Brook, Captain Edward W., of Kinmount, Annan, " Game Bird."
4th	No. 841	Corbett, The Hon. G., M.C., Rowallan, Kilmarnock, " Susan."
V	No. 844	Spencer-Nairn, Major Sir Robert, Leslie House, Leslie, Fife, " Primrose."
H	No. 845	Spencer-Nairn, Major Sir Robert, Leslie House, Leslie, Fife, " Highly Delighted."

CLASS 101. GELDING, born in 1928.—PREMIUMS, £10, £5, and £3.

1st No. 848 Jackson, Mrs H., Balnacraig, Pitlochry, "Blair Athole."
2nd No. 847 Brook, Captain Edward W., of Kinmount, Annan, "Ebor."
3rd No. 846 Bell-Irving, John, White Hill, Lockerbie, "What Next."
V No. 849 Thomson, Moffat S., of Lambden, Greenlaw, Berwickshire, "Journey's End."

Best Hunter Filly, entered in Classes 102, 104, *and* 106, *registered with a number in the Hunter Stud-Book, or the entry tendered within a month of the award*—Champion Gold Medal, value £10. Given by the Hunters' Improvement and National Light Horse Breeding Society.

No. 850 Cheape, Brig.-General R., C.M.G., D.S.O., M.C., of Wellfield, Gateside, Fife, "Priory Lass."

Reserve—No. 897 Thomson, Major A. D., of Nenthorn, Kelso.

CLASS 102. FILLY, born in 1928.—PREMIUMS, £10, £5, and £3.

1st No. 850 Cheape, Brig.-General R., C.M.G., D.S.O., M.C., of Wellfield, Gateside, Fife, "Priory Lass."
2nd No. 851 Leitch, Richard, Lennelhill, Coldstream, "Gold Mint" (7406).
3rd No. 852 Robson-Scott, J. A., of Newton, Jedburgh, "Marsetha."
V No. 853 Sharpe, Major Robert W., of The Park, Earlston, Berwickshire, "Friendship."

CLASS 103. GELDING, born in 1929.—PREMIUMS, £10, £5, and £3.

1st No. 865 Straker, John C., Stagshaw, Corbridge-on-Tyne, "Ilston Star."
2nd No. 861 Leitch, Richard, Lennelhill, Coldstream, "Mischief."
3rd No. 864 Robson-Scott, T. W., of Lanton Tower, Jedburgh, "Jed."
V No. 866 Thomson, Major A. D., of Nenthorn, Kelso.
H No. 860 Leitch, Richard, Lennelhill, Coldstream, "Be Quiet."
C No. 856 Elder, Archibald J., Pitbauchlie, Dunfermline, "Sunbar."
C No. 859 Jardine, Brig.-General J. B., of Chesterknowes, Lilliesleaf, Roxburghshire, "King of Tragedy."

CLASS 104. FILLY, born in 1929.—PREMIUMS, £10, £5, and £3.

1st No. 874 Paton, Alastair W., Pawston, Mindrum, Northumberland, "The Nun VI." (7292).
2nd No. 868 Black, W. C. G., Chapel, Kingskettle, Fife, "Jenny."
3rd No. 869 Dove, G. H. J., Estate Office, Mellerstain, Gordon, "Babs."
V No. 876 Thomson, Major A. D., of Nenthorn, Kelso.
H No. 871 Drummond, Mrs, of Megginch, Megginch Castle, Errol, Perthshire, "Tit-bit."
C No. 872 Leitch, Richard, Lennelhill, Coldstream, "Dorothy."
C No. 875 Salvesen, Miss Eileen R., Lathallan, Polmont, "Black Satin."

CLASS 105. COLT or GELDING, born in 1930.—PREMIUMS, £10, £5, and £3.

1st No. 886 Parsons, Mrs E. H. T., Fordbank, Milliken Park, Renfrewshire, Colt, " Long Fellow."
2nd No. 882 Currie, Miss Thomson, Clatto, Cupar, Fife, Colt, " Mark Anthony."
3rd No. 887 Robson-Scott, J. A., of Newton, Jedburgh, Gelding, " Ruberslaw."
V No. 888 Thomson, Major A. D., of Nenthorn, Kelso, Gelding.
H No. 883 Dove, G. H. J., Estate Office, Mellerstain, Gordon, Gelding, " Barney."
C No. 881 Currie, Mrs M., Swinton House, Duns, Gelding, " Hullabaloo."
C No. 884 Dudgeon, A. N., Humbie, Kirkliston, Gelding, " Meravon."

CLASS 106. FILLY, born in 1930.—PREMIUMS, £10, £5, and £3.

1st No. 897 Thomson, Major A. D., of Nenthorn, Kelso.
2nd No. 896 Spencer-Nairn, Major Sir Robert, Leslie House, Leslie, Fife, " Elizabeth Arden."
3rd No. 894 Parsons, Mrs E. H. T., Fordbank, Milliken Park, Renfrewshire, " Rosarch."
V No. 891 Bell-Irving, John, White Hill, Lockerbie, " Hot Air."
H No. 893 Jackson, Mrs H., Balnacraig, Pitlochry, " Pavlova."
C No. 898 Thomson, Moffat S., of Lambden, Greenlaw, Berwickshire, " Revoke."

CLASS 107. MARE or GELDING, born before 1927, to carry 14 stone and over—*in saddle.*—PREMIUMS, £20, £10, £5, and £3.

1st No. 901 Eckford, A. Herbert, Mavishaugh, St Andrews, Mare, " Jessica."
2nd No. 900 Eckford, A. Herbert, Mavishaugh, St Andrews, Mare, " Festival."
3rd No. 899 Dunbar, Peter, St Martin's, Wardie Crescent, Edinburgh, Gelding, " Peter II."

CLASS 108. MARE or GELDING, born before 1927, to carry 13 stone and under 14 stone—*in saddle.*—PREMIUMS, £20, £10, £5, and £3.

1st No. 904 Dunn, Andrew, Redden, Kelso, Gelding, " Billy Dear II."
2nd No. 902 Ainsworth, Lady, Ardanaiseig, Kilchrenan, Argyll, Gelding, " Cottage Pie."
3rd No. 907 Thomson, Major A. D., of Nenthorn, Kelso, Gelding, " Simple Simon."
4th No. 905 Parsons, Mrs E. H. T., Fordbank, Milliken Park, Renfrewshire, Gelding, " The Protector."
V No. 903 Chartres, C. B., Mindrum, Northumberland, Mare, " Miss Dibs " (6693).
H No. 906 Patrick, Cargill L., Dean Bank Lane Riding Stables, Edinburgh, Gelding, " Rooskey Prince."

CLASS 109. MARE or GELDING, born before 1927, to carry under 13 stone—*in saddle.*—PREMIUMS, £20, £10, £5, and £3.

1st	No. 909	Bell-Irving, John, White Hill, Lockerbie, Gelding, " Ucmehopit."
2nd	No. 912	Kennedy, John, Barnsdale, St Boswells, Gelding, " Storm."
3rd	No. 908	Ainslie, A. M., 35 Charlotte Street, Leith, Gelding, " Gay Lothario."
4th	No. 913	Parsons, Mrs E. H. T., Fordbank, Milliken Park, Renfrewshire, Gelding, " Wisdom."
V	No. 911	Jardine, Brig.-General J. B., of Chesterknowes, Lilliesleaf, Roxburghshire, Mare, " Etholda."
C	No. 915	Usher, Miss Annette, 2 Randolph Cliff, Edinburgh, Gelding, " The Sheik."

CLASS 110. MARE or GELDING, born in 1927, to carry 13 stone and over—*in saddle.*—PREMIUMS, £20, £10, £5, and £3.

1st	No. 919	Thomson, Moffat S., of Lambden, Greenlaw, Berwickshire, Gelding, " Sky Pilot."
2nd	No. 916	Chartres, C. B., Mindrum, Northumberland, Gelding, " Mindrum " (1077).
3rd	No. 918	Thomson, Major A. D., of Nenthorn, Kelso, Mare, ' Night Out."
4th	No. 917	Currie, Miss Thomson, Clatto, Cupar, Fife, Gelding, ' Brian Boru."

CLASS 111. MARE or GELDING, born in 1927, to carry under 13 stone—*in saddle.*—PREMIUMS, £20, £10, £5, and £3.

1st	No. 922	Thomson, Major A. D., of Nenthorn, Kelso, Mare, " Deception."
2nd	No. 921	Sharpe, Major Robert W., of the Park, Earlston, Berwickshire, Mare, " Fairy."
3rd	No. 920	Elliot, Thomas R., Attonburn, Kelso, Mare, " Megget."

CLASS 112. HACK OF HUNTER TYPE, born before 1928, 15.2 Hands and under—*in saddle.*—PREMIUMS, £10, £5, and £3.

1st	No. 924	Dove, G. H. J., Estate Office, Mellerstain, Gordon, Mare, " Sally."
2nd	No. 923	Currie, Miss Thomson, Clatto, Cupar, Fife, Gelding, " Mascot."
3rd	No. 926	Dunbar, Peter, St Martin's, Wardie Crescent, Edinburgh, Mare, " Whinstone."
V	No. 925	Duguid, Miss E. F. M., Manar, Inverurie, Mare, " Melody."

HIGHLAND PONY AND WESTERN ISLAND PONY.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Highland or Western Island Pony.

No. 955 Elford, Miss Lilian, Rosehaugh, Avoch, Ross-shire, " Lady Phœnix " (3376).

Reserve—No. 928 Department of Agriculture for Scotland, York Buildings, Queen Street, Edinburgh, " Faillie Diamond " (1475).

Special Prize of £10 given by National Pony Society *for best Pony over 14 Hands and not exceeding 14.2 Hands. "Extra Stock" eligible to compete. Competition strictly confined to animals passed sound and free from hereditary disease.*

No. 928 Department of Agriculture for Scotland, York Buildings, Queen Street, Edinburgh, "Faillie Diamond" (1475).

Special Prize of £10 given by Highland Pony Society *for best Pony not exceeding 14 Hands. "Extra Stock" eligible to compete. Competition strictly confined to animals passed sound and free from hereditary disease.*

No. 955 Elford, Miss Lilian, Rosehaugh, Avoch, Ross-shire, "Lady Phœnix" (3376).

CLASS 113. STALLION, born before 1929, over 14 Hands, and not exceeding 14.2 Hands.—PREMIUMS, £10, £6, £3, and £2.

1st No. 928 Department of Agriculture for Scotland, York Buildings, Queen Street, Edinburgh, "Faillie Diamond" (1475).
2nd No. 931 Wooley, Thomas, Commercial Hotel, Bonar Bridge, "Neil Gow."
3rd No. 929 Honeyman, R. Wemyss, Derculich, Strathtay, "Beaufort of Glenfarg" (1536).
4th No. 927 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, "Struan Laddie" (1493).
V No. 930 Mackelvie, Donald, New Lanark, Lamlash, "Balnagore" (1698).

EXTRA STOCK.

The following was awarded the Silver Medal:—

No. 933 Wright, Major D. G. Moncrieff, of Kinmonth, Bridge of Earn, "Glen Bernesdale" (891).

The following was awarded the Medium Silver Medal:—

No. 932 Mackenzie, Major H. M., Moorside Farm, Caton, Lancaster, "White Heather III." (1004).

CLASS 114. STALLION, born before 1929, not exceeding 14 Hands. —PREMIUMS, £10, £6, £3, and £2.

1st No. 934 Mackelvie, Donald, New Lanark, Lamlash, "Ranza" (1699).
2nd No. 935 Mackenzie, Major H. M., Moorside Farm, Caton, Lancaster, "Odin" (1489).
3rd No. 936 Webster, Miss E. Ruth, Ashbrook, Arbroath, "Glenninian" (1651).

EXTRA STOCK.

The following were awarded the Silver Medal:—

No. 937 Cross, Sir William, of Scatwell, Bart., Muir of Ord, "Bonnie Charlie of Farr" (1124).
No. 938 Macbeth, W. Gilchrist, of Dunira, Comrie, "Chalmadale" (1697).
No. 939 Sharp, Miss E. C., Balmuir, Dundee, "Lord of the Isles" (999).

Silver Medal given by National Pony Society *for best Mare over* 14 *Hands and not exceeding* 14.2 *Hands. "Extra Stock" eligible to compete.*

No. 940 Cameron, John A., Glenfintaig, Corstorphine, "Staffin Princess" (6236).

Silver Medal given by National Pony Society *for best Mare not exceeding* 14 *Hands. "Extra Stock" eligible to compete.*

No. 955 Elford, Miss Lilian, Rosehaugh, Avoch, Ross-shire, "Lady Phœnix" (3376).

CLASS 115. MARE, born before 1929, over 14 Hands and not exceeding 14.2 Hands, Yeld or with Foal at foot.—PREMIUMS, £10, £6, £3, and £2.

1st No. 940 Cameron, John A., Glenfintaig, Corstorphine, "Staffin Princess" (6236).
2nd No. 943 Nasmyth, Norman J., of Glenfarg, Abernethy, "Violet of Glenfarg" (5254).
3rd No. 942 Department of Agriculture for Scotland, York Buildings, Queen Street, Edinburgh, "Faillie Mist" (5514).
4th No. 944 Wright, Major D. G. Moncrieff, of Kinmonth, Bridge of Earn, "Ribhinn Oig" (4689).
V No. 941 Cameron, John A., Glenfintaig, Corstorphine, "Kilmaluag Peggy" (6235).
H No. 945 Wright, Major D. G. Moncrieff, of Kinmonth, Bridge of Earn, "Dorothy of Kinmonth" (5965).

EXTRA STOCK.

The following was awarded the Silver Medal:—

No. 946 Elford, Miss Lilian, Rosehaugh, Avoch, Ross-shire, "Lady Mora" (3378).

CLASS 116. MARE, born before 1929, not exceeding 14 Hands, Yeld or with Foal at foot.—PREMIUMS, £10, £6, £3, and £2.

1st No. 949 Macbeth, W. Gilchrist, of Dunira, Comrie, "Queenie IX." (6056).
2nd No. 948 Elford, Miss Lilian, Rosehaugh, Avoch, Ross-shire, "Flora of Rosehaugh" (5409).
3rd No. 950 Macbeth, W. Gilchrist, of Dunira, Comrie, "Calliach Bhan VIII." (5938).
4th No. 952 Sharp, Miss E. C., Balmuir, Dundee, "Glastaig of Dalnaglar" (6228).
V No. 951 Mundell, George, Kingledores, Broughton, Peeblesshire, "Muran" (6227).
H No. 947 Department of Agriculture for Scotland, York Buildings, Queen Street, Edinburgh, "Faillie Mary."

EXTRA STOCK.

The following were awarded the Silver Medal:—

No. 955 Elford, Miss Lilian, Rosehaugh, Avoch, Ross-shire, "Lady Phœnix" (3376).
No. 956 Wright, Major D. G. Moncrieff, of Kinmonth, Bridge of Earn, "Isle of Arran Bonnie Jean" (4408).

CLASS 117. ENTIRE COLT, born on or after 1st January 1929, not exceeding 14.2 Hands.—Premiums, £8, £5, £3, and £2.

1st No. 957 Mackenzie, Major H. M., Moorside Farm, Caton, Lancaster, " Mountain Boy."
2nd No. 958 Sharp, Miss E. C., Balmuir, Dundee, " Rory of Dalnaglar " (1757).

CLASS 118. FILLY, born on or after 1st January 1929, not exceeding 14.2 Hands.—Premiums, £8, £5, £3, and £2.

1st No. 961 Mackelvie, Donald, New Lanark, Lamlash, " Glaster " (6170).
2nd No. 960 Macdonald, Mrs Maxwell, Pollok House, Glasgow, " Corrour."
3rd No. 963 Mackenzie, Major H. M., Moorside Farm, Caton, Lancaster, " Gray Plover."
4th No. 959 Macbeth, W. Gilchrist, of Dunira, Comrie, " Creag Odhar " (6180).
V No. 962 Mackelvie, Donald, New Lanark, Lamlash, " Grisel " (6169).

CLASS 119. GELDING, born before 1929, not exceeding 14.2 Hands.—Premiums, £8, £5, £3, and £2.

1st No. 966 Elford, Miss Lilian, Rosehaugh, Avoch, Ross-shire, " Price."
2nd No. 968 Macdonald, Mrs Maxwell, Pollok House, Glasgow, " Corrour Guilbhinn " (1109).
3rd No. 967 Macbeth, W. Gilchrist, of Dunira, Comrie, " Alastair."
4th No. 969 Montrose, The Duchess of, Brodick Castle, Brodick, Arran, " Prince."
V No. 964 Atholl, The Duke of, K.T., Blair Castle, Blair Atholl, " Donald."

SHETLAND PONY.

(ALL SHOWN IN HAND.)

PRINCE OF WALES CHAMPION GOLD MEDAL for best Shetland Pony.

No. 971 Mackenzie, R. W. R., Carpow, Newburgh, Fife, " Lord George " (1264).

Reserve—No. 993 Mackenzie, R. W. R., Carpow, Newburgh, Fife, " Elder Flower 2nd of Earlshall."

Best Group of Shetland Ponies, drawn from the ordinary Classes, consisting of one male and two females—£10. Given by " Four Lovers of the Breed," per Mr W. Mungall of Transy.

Mackenzie, R. W. R., Carpow, Newburgh, Fife (Nos. 971, 987, 993).

Silver Medal *for the best Shetland Pony of the sex opposite to that of the winner of the President's Medal, entered or eligible for entry in the Shetland Pony Stud-Book.* Given by the Shetland Pony Stud-Book Society.

No. 993 Mackenzie, R. W. R., Carpow, Newburgh, Fife, "Elder Flower 2nd of Earlshall."

Silver Cup, value £10, *for best Shetland Pony of any age, drawn from the ordinary Classes—and shown in saddle.* Given by a past President of the Shetland Pony Stud-Book Society.

No. 975 Duguid, Miss H. M., Manar, Inverurie, "Rambler of Maryfield."

CLASS 120. STALLION, not exceeding 10½ Hands, born before 1928.—PREMIUMS, £10, £6, £4, and £3.

1st No. 971 Mackenzie, R. W. R., Carpow, Newburgh, Fife, "Lord George" (1264).
2nd No. 973 Mungall, William, of Transy, Dunfermline, "Kitmagur of Penniwells" (1246).
3rd No. 972 Mungall, William, of Transy, Dunfermline, "Rosador of Transy" (1267).
4th No. 974 Wyllie, James F., East Mill, Currie, "Silver Royal of Anniston" (1176).

CLASS 121. ENTIRE COLT, not exceeding 10½ Hands, born in 1928 or 1929.—PREMIUMS, £10, £6, £4, and £3.

1st No. 977 Mungall, William, of Transy, Dunfermline, "Helock of Transy."
2nd No. 978 Mungall, William, of Transy, Dunfermline, "Sophimore of Transy."
3rd No. 976 Mackenzie, R. W. R., Carpow, Newburgh, Fife, "Glomen of Earlshall."
4th No. 975 Duguid, Miss H. M., Manar, Inverurie, "Rambler of Maryfield."

Best Foal entered with its dam in Class 122—£5. Given by Miss H. M. Duguid, Manar, Inverurie.

No. 983 Mungall, William, of Transy, Dunfermline.

CLASS 122. MARE, not exceeding 10½ Hands, with Foal at foot.—PREMIUMS, £10, £6, £4, and £3.

1st No. 983 Mungall, William, of Transy, Dunfermline, "Stelsa of Transy" (4450).
2nd No. 982 Mungall, William, of Transy, Dunfermline, "Sunbeam of Transy" (4353).
3rd No. 979 Blount, James, Cuilivait, Dumfries, "Euphemia of Earlshall" (4155).

CLASS 123. YELD MARE, not exceeding 10½ Hands. —PREMIUMS, £10, £6, £4, and £3.

1st	No. 989	Mungall, William, of Transy, Dunfermline, "Saidee of Transy" (4448).
2nd	No. 988	Mungall, William, of Transy, Dunfermline, "Felicia of Transy" (3945).
3rd	No. 987	Mackenzie, R. W. R., Carpow, Newburgh, Fife, "Agnes of Earlshall."
4th	No. 986	Dunsmore, Buchanan, Comely Bank, Perth, "Beauté" (4471).
V	No. 990	Steen, Thomas, Carrick Lodge, Ayr, "Bet."

CLASS 124. FILLY, not exceeding 10½ Hands, born in 1928 or 1929.—PREMIUMS, £10, £6, £4, and £3.

1st	No. 993	Mackenzie, R. W. R., Carpow, Newburgh, Fife, "Elder Flower 2nd of Earlshall."
2nd	No. 994	Mungall, William, of Transy, Dunfermline, "Bervetta of Transy."
3rd	No. 992	Duguid, Miss H. M., Manar, Inverurie, "Silver Birch."
4th	No. 995	Straker, Miss Phyllis L., Stagshaw, Corbridge-on-Tyne, "Prunella of Glendhu."

CLASS 125. GELDING, not exceeding 10½ Hands, born before 1929.—PREMIUMS, £10, £6, £4, and £3.

1st	No. 996	Clark, Graham, Ashbank, Maberly Street, Aberdeen, "Ashbank Amberwave."

RIDING PONY.

CLASS 126. MARE or GELDING, any age, over 13.2 Hands, and not exceeding 14.2 Hands—*in saddle*.—PREMIUMS, £6, £4, £3, and £2.

1st	No. 998	Elliot, Thomas R., Attonburn, Kelso, Mare, "Matty."
2nd	No. 1000	Smith, Montgomery, The Hillocks, Bucksburn, Mare, "Goldflake."
3rd	No. 999	Polwarth, The Master of, Harden, Hawick, Mare, "Phœbe."
4th	No. 997	Baird, Miss Jean, Segton House, Kilmarnock, Gelding, "Dazzler."

CLASS 127. MARE or GELDING, any age, over 12.2 Hands, and not exceeding 13.2 Hands—*in saddle*.—PREMIUMS, £6, £4, £3, and £2.

1st	No. 1003	Duff, Miss M. B., 5A Greenhill Park, Edinburgh, Gelding, "Spider."
2nd	No. 1004	Dunbar, Peter, St Martin's, Wardie Crescent, Edinburgh, Mare, "Creamalt."
3rd	No. 1002	Campbell, Hon. Jean, Hunthill, Jedburgh, Mare, "Tara."
4th	No. 1005	Mackenzie, Major H. M., Moorside Farm, Caton, Lancaster, Mare, "Lady Heather" (5882).

CLASS 128. MARE or GELDING, any age, not exceeding 12.2 Hands—*in saddle.*—Premiums, £6, £4, £3, and £2.

1st No. 1009 Ogilvie, Miss Kathleen D., Holefield, Kelso, Gelding, "Blazer."
2nd No. 1006 Duguid, Miss H. M., Manar, Inverurie, Gelding, "Honour Bright."
3rd No. 1010 Thomson, Miss Margaret, Lambden, Greenlaw, Berwickshire, Gelding, "Broncho."
4th No. 1007 Graham, Master Ivar, Mortonhall, Liberton, Midlothian, Mare, "Peggy."
V No. 1008 M'Laren, A. J., Ellaslea, Dollar, Mare, "Lady."

HORSE IN HARNESS.

PRINCE OF WALES CHAMPION GOLD MEDAL for best animal in the Classes for Horses in Harness.

No. 1018 Macmillan, Walter, Mambeg House, Mambeg, Garelochhead, Mare, "Clyde Masque" (26,430).

Reserve—No. 1013 Kinross, William, 13 Clarendon Place, Stirling, Mare, "Warwick Valencia" (26,636).

CLASS 129. YELD MARE, FILLY, or GELDING, any age, in Harness, exceeding 15 Hands, to be driven in the ring.—Premiums, £15, £10, and £5.

1st No. 1012 Lawson, W. M., Annalea, 53 Grange Loan, Edinburgh, Gelding, "Glenavon Chancellor" (G 670).
2nd No. 1011 Alison, Christie, 26 West Preston Street, Edinburgh, Gelding, "Glad Eye" (13,322).

CLASS 130. YELD MARE, FILLY, or GELDING, any age, in Harness, over 14 Hands and not exceeding 15 Hands, to be driven in the ring. —Premiums, £15, £10, and £5.

1st No. 1013 Kinross, William, 13 Clarendon Place, Stirling, Mare, "Warwick Valencia" (26,636).

CLASS 131. YELD MARE, FILLY, or GELDING, any age, not exceeding 14 Hands, to be driven in the ring.—Premiums, £10, £5, and £3.

1st No. 1017 Macmillan, Walter, Mambeg House, Mambeg, Garelochhead, Mare, "Braishfield Fuel" (26,407).
2nd No. 1015 Arnot, Robert, South Letham Farm, Falkirk, Gelding, "Regal Dignity" (G 623).
3rd No. 1016 Jack, James, Inch Dairy, Nether Liberton, Liberton, Midlothian, Gelding, "Monty's Wonder" (306).

EXTRA STOCK.

The following was awarded the Silver Medal:—

No. 1018 Macmillan, Walter, Mambeg House, Mambeg, Garelochhead, Mare, "Clyde Masque" (26,430).

DRAUGHT GELDING IN HARNESS.

CLASS 132. DRAUGHT GELDING, any age, in Harness, shown in Cart or Lorry (and driven by single driver), it being a condition that the Horse must have been regularly worked for a period of twelve weeks prior to the first day of the Show.—PRIZES, £10, £5, £3, £2, and £1.

1st No. 1020 Bruce Lindsay Brothers, Limited, 8 John's Place, Leith, "Jamie."
2nd No. 1021 Farquhar, Andrew, Middleton Farm, Bowling, "Macduff."
3rd No. 1019 Bruce Lindsay Brothers, Limited, 8 John's Place, Leith, "Sammy."
4th No. 1024 Scottish Co-operative Wholesale Society, Limited (Transport Department), 12 West Bowling Green Street, Leith, "Jim."
5th No. 1022 Finlayson, William, 148 New Street, Musselburgh, "Star."
V No. 1023 Leith Provident Co-operative Society, Limited, 22 Bangor Road, Leith, "Dan."

JUMPING COMPETITIONS.

Champion Prize of £10 *for the most points in Prizes with one Horse in Classes* 1, 3, *and* 5.

CONDITIONS.—First Prize to count five points; Second Prize, four points; Third Prize, three points; Fourth Prize, two points; Fifth Prize, one point. The money to be evenly divided in the event of a tie.

Grange, F. V., Alvaston, Nantwich, gelding, "Always" (9½ points).

CLASS 1. HORSE or PONY, any height.—PREMIUMS, £20, £15, £10, £5, and £3.

1st } equal { Grange, F. V., Alvaston, Nantwich, gelding, "Always."
2nd } equal { Bradley, Ernest, Newtongrange, Great Ayton, mare, "Kitty."
3rd } equal { Allen, P. L. R., Davenham Hall, Northwich, gelding, "Tony."
4th } equal { Allen, P. L. R., Davenham Hall, Northwich, gelding, "Falkner."
5th } equal { Grange, F. V., Alvaston, Nantwich, gelding, "Desire."

CLASS 2. HORSE or PONY, any height, which has not previously won a prize of more than £10.—PREMIUMS, £10, £8, £5, £3, and £2.

1st Constable, Miss Marjorie, Hope Farm Riding School, Bucksburn, gelding, "Mirth."
2nd Young, Miss Betty, 4 Gordon Street, Paisley, gelding, "Acrobat."
3rd Brown, Master H. C., Westerton, Killearn, gelding, "John Willie."
4th Luke, L/Corporal, 16/5th Lancers, Colinton, mare, "Flip."
5th equal { Riddiford, R.S.M., 16/5th Lancers, Colinton, gelding, "Mick."
5th equal { Patrick, C. L., 7 Dean Bank Lane, Edinburgh, gelding, "Nipper."

CLASS 3. HORSE or PONY, any height, Handicap, hurdles, and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in Class 1.—PREMIUMS, £20, £15, £10, £5, and £3.

1st } equal { Allen, P. L. R., Davenham Hall, Northwich, gelding, "Tony."
2nd }   { Bradley, Ernest, Newtongrange, Great Ayton, mare, "Kitty."
3rd }   { Allison, Frank, Mitre Hotel, Penrith, gelding, "Samson."
4th } equal { Grange, F. V., Alvaston, Nantwich, gelding, "Desire."
5th }   { Allen, P. L. R., Davenham Hall, Northwich, gelding, "Falkner."

CLASS 4. HORSE or PONY, any height.—PREMIUMS, £10, £8, £5, £3, and £2.

1st } equal { Allen, P. L. R., Davenham Hall, Northwich, gelding, "Falkner."
2nd }   { Grange, F. V., Alvaston, Nantwich, gelding, "Desire."
3rd Grange, F. V., Alvaston, Nantwich, gelding, "Always."
4th Bradley, Ernest, Newtongrange, Great Ayton, mare, "Kitty."
5th equal { Bradley, Ernest, Newtongrange, Great Ayton, gelding, "Toper."
          { Allison, Frank, Mitre Hotel, Penrith, gelding, "Samson."

CLASS 5. HORSE or PONY, any height, Handicap, hurdles, and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in either of Classes 1 or 3—4 inches extra for the winner of the two first prizes in Classes 1 and 3.—PREMIUMS, £15, £10, £5, £3, and £2.

1st Grange, F. V., Alvaston, Nantwich, gelding, "Always."
2nd } equal { Riddiford, R.S.M., 16/5th Lancers, Colinton, gelding, "Mick."
3rd }   { Babington, Captain G., 16/5th Lancers, Colinton, mare, "Annette."
4th Allen, P. L. R., Davenham Hall, Northwich, gelding, "Tony."
5th Young, Miss Jen, 33 Carrick Street, Ayr, gelding, "Toby."

BACON PIG COMPETITION

Silver Cup.

Findlay, Robert, Easter Cadder, Kirkintilloch.

DIVISION I. Stages 2 and 3. Premiums, £8, £5, and £3.

1st	Nos. 39 and 40	Findlay, Robert, Easter Cadder, Kirkintilloch.
2nd	Nos. 37 and 38	Findlay, Robert, Easter Cadder, Kirkintilloch.
3rd	Nos. 23 and 24	Wallace, Captain A. A., Halbeath House, Halbeath.

DIVISION II. Stages 3 and 4. Premiums, £8, £5, and £3.

1st	Nos. 23 and 24	Wallace, Captain A. A., Halbeath House, Halbeath.
2nd 3rd equal	Nos. 35 and 36	Drummond, William, Stanley, Bindsmill, Broxburn.
	Nos. 53 and 54	Watson, William, Cawhillan, Ochiltree.
	Nos. 65 and 66	Keir & Cawder, Limited, Kirkintilloch.

POULTRY

First Premium—Twenty Shillings. Second Premium—Ten Shillings. In each Class in which there are four or more entries a Third Premium of Five Shillings may be awarded, provided there is sufficient merit in the pens.

Champion Challenge Silver Salver, value £30, *for the best exhibit in the Poultry Classes*—given by the late Lord Dewar.

No. 329 Belbin, C. N., Nortonthorpe Hall, Huddersfield.

PRINCE OF WALES CHAMPION SILVER MEDALS.

1. *Best Cock, any Variety.*

No. 329 Belbin, C. N., Nortonthorpe Hall, Huddersfield.

2. *Best Hen, any Variety.*

No. 230 Anthony, R., Euxton, Chorley, Lancashire.

3. *Best Cockerel, any Variety.*

No. 161 Anthony, R., Euxton, Chorley, Lancashire.

4. *Best Pullet, any Variety.*

No. 327 Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex.

5. *Best Waterfowl.*

No. 603 Anthony, R., Euxton, Chorley, Lancashire.

6. *Best Turkey.*

No. 613 Andrew, Mrs Jessie, South Tulloford, Oldmeldrum.

7. *Best Utility Bird (Classes 97 to 109).*

No. 458 Binnie, W., Garth House, Denny.

CLASS 1. LEGHORN—White—Cock.

1st No. 1 Binnie. W., Garth House, Denny.
2nd No. 2 Weir, James, Brickhouse, New Abbey Road, Dumfries.
V No. 3 Wilson, Ludovic, Thorn Farm, Dollar.

CLASS 2. LEGHORN—White—Hen.

1st No. 4 Binnie, W., Garth House, Denny.
2nd No. 5 Weir, James, Brickhouse, New Abbey Road, Dumfries.

CLASS 3. LEGHORN—White—Cockerel.

1st No. 9 Weir, James, Brickhouse, New Abbey Road, Dumfries.
2nd No. 8 Graham, Mrs R., Wallacetown Cottages, Gasstown, Dumfries.
3rd No. 7 Graham, Mrs R., Wallacetown Cottages, Gasstown, Dumfries.

CLASS 4. LEGHORN—White—Pullet.

1st No. 10 Binnie, W., Garth House, Denny.
2nd No. 12 Graham, Mrs R., Wallacetown Cottages, Dumfries.
3rd No. 11 Graham, Mrs R., Wallacetown Cottages, Dumfries.
V No. 13 Weir, James, Brickhouse, New Abbey Road, Dumfries.

CLASS 5. LEGHORN—Exchequer—Cock or Cockerel.

1st No. 17 Weir, James, Brickhouse, New Abbey Road, Dumfries (Cock).
2nd No. 16 Templeton, George, Knowe Farm, Auchinleck (Cock).
3rd No. 14 Glencross, R., & Son, Largo Cottage, Glencraig (Cock).

CLASS 6. LEGHORN—Exchequer—Hen or Pullet.

1st No. 20 Templeton, George, Knowe Farm, Auchinleck (Hen).
2nd No. 19 Reid, D. N., Tullich, Lochcarron (Hen).
V No. 18 Glencross, R., & Son, Largo Cottage, Glencraig (Hen).

CLASS 7. LEGHORN—Any other Colour—Cock.

1st No. 24 Ross, J. C., Stirling Road, Larbert (Brown).
2nd No. 22 Morgan, William, Balcurvie, Windygates (Brown).
3rd No. 23 O'Hanlon, S., Buttermere, Cockermouth (Brown).

CLASS 8. LEGHORN—Any other Colour—Hen.

1st No. 28 Kirkwood, R. A., Camelon Hotel, Falkirk (Brown).
2nd No. 26 Argo, Fred, Bructor, Inverurie (Brown).
3rd No. 29 Ross, J. C., Stirling Road, Larbert (Black).
V No. 30 Ross, J. C., Stirling Road, Larbert (Black).
H No. 27 Brown, Charles, Ivybank, Kintore (Brown).

CLASS 9. LEGHORN—Any other Colour—Cockerel.

1st No. 34 Weir, James, Brickhouse, New Abbey Road, Dumfries (Brown).
2nd No. 33 Kirkwood, R. A., Camelon Hotel, Falkirk (Brown).

CLASS 10. LEGHORN—Any other Colour—Pullet.

1st No. 35 Argo, Fred, Bructor, Inverurie (Brown).
2nd No. 36 Kirkwood, R. A., Camelon Hotel, Falkirk (Brown).

CLASS 11. MINORCA—Cock.

1st No. 37 Binnie, W., Garth House, Denny.
2nd No. 38 Logan, Miss F. R., Mains of Kinmonth, Bridge of Earn.
3rd No. 40 Weir, James, Brickhouse, New Abbey Road, Dumfries.
V No. 39 Macgregor, James Scott, Bridgend Bakery, Greenlaw.

CLASS 12. MINORCA—Hen.

1st No. 41 Binnie, W., Garth House, Denny.
2nd No. 49 Weir, James, Brickhouse, New Abbey Road, Dumfries.
3rd No. 44 Logan, Miss F. R., Mains of Kinmonth, Bridge of Earn.
V No. 45 Macgregor, James Scott, Bridgend Bakery, Greenlaw.
H No. 42 Dalrymple, John, & Son, Meadowview, Leslie.
C No. 46 Russell, John, Tinto View, Pettinain, Biggar.

CLASS 13. MINORCA—Cockerel.

1st No. 50 Binnie, W., Garth House, Denny.

CLASS 14. MINORCA—Pullet.

1st No. 51 Binnie, W., Garth House, Denny.

CLASS 15. HAMBURGH—Cock.

1st No. 52 Beattie, Robert, 114 Lockerbie Road, Dumfries.
2nd No. 53 Beattie, Robert, 114 Lockerbie Road, Dumfries.
V No. 54 Milligan, W., Mid Murray, East Kilbride.

CLASS 16. HAMBURGH—Hen.

1st No. 55 Beattie, Robert, 114 Lockerbie Road, Dumfries.
2nd No. 57 Morris, F., Broomknowe, Dalbeattie.
V No. 56 Milligan, W., Mid Murray, East Kilbride.

CLASS 17. HAMBURGH—Cockerel.

1st No. 58 Milligan, W., Mid Murray, East Kilbride.
2nd No. 60 Morris, F., Broomknowe, Dalbeattie.

CLASS 18. HAMBURGH—Pullet.

1st No. 61 Morris, F., Broomknowe, Dalbeattie.

CLASS 19. SCOTCH GREY—Cock.

1st No. 66 Retson, J. M., Townhead, Newton Mearns.
2nd No. 64 Ramsay, William, Muirhouse Cottage, Crosshouse.
3rd No. 70 Watson, William, Bonnie View Cottage, Falkirk.
V No. 72 Young, Dr Stephen, 6 Woodside Place, Glasgow.
H No. 65 Ramsay, William, Muirhouse Cottage, Crosshouse.
C No. 69 Stirling, Thomas, Graystale Farm, Stirling.

CLASS 20. SCOTCH GREY—Hen.

1st No. 76 Retson, J. M., Townhead, Newton Mearns.
2nd No. 74 Ramsay, William, Muirhouse Cottage, Crosshouse.
3rd No. 79 Watson, William, Bonnie View Cottage, Falkirk.
V No. 75 Ramsay, William, Muirhouse Cottage, Crosshouse.
H No. 73 Carswell, John, Hazelbank, Graham's Road, Falkirk.
C No. 77 Smith, Matthew, Netherholm House, Dumfries.

CLASS 21. SCOTCH GREY—Cockerel.

1st No. 84 Watson, William, Bonnie View Cottage, Falkirk.
2nd No. 85 Young, Dr Stephen, 6 Woodside Place, Glasgow.
3rd No. 83 Ramsay, William, Muirhouse Cottage, Crosshouse.

CLASS 22. SCOTCH GREY—Pullet.

1st No. 88 Ramsay, William, Muirhouse Cottage, Crosshouse.
2nd No. 89 Ramsay, William, Muirhouse Cottage, Crosshouse.
3rd No. 91 Young, Dr Stephen, 6 Woodside Place, Glasgow.
V No. 90 Watson, William, Bonnie View Cottage, Falkirk.

CLASS 23. PLYMOUTH ROCK—Barred—Cock.

1st No. 92 Anthony, R., Euxton, Chorley, Lancashire.
2nd No. 94 Wilson, Ludovic, Thorn Farm, Dollar.

CLASS 24. PLYMOUTH ROCK—Barred—Hen.

1st No. 95 Brown, Charles, Ivybank, Kintore.
2nd No. 98 Grant, Mrs Norman, Green World, Copthorne, Sussex.
3rd No. 100 Reid, David, Firthview, Portgordon.
V No. 99 Logan, James, Lauder Place, East Linton.
H No. 101 Wilson, Ludovic, Thorn Farm, Dollar.
C No. 96 Butt, Mrs W. W. W., Eastfield Poultry Farm, North Thoresby, Lincolnshire.

CLASS 25. PLYMOUTH ROCK—Barred—Cockerel.

1st No. 103 Grant, Mrs Norman, Green World, Copthorne, Sussex.
2nd No. 102 Butt, Mrs W. W. W., Eastfield Poultry Farm, North Thoresby, Lincolnshire.

CLASS 26. PLYMOUTH ROCK—Barred—Pullet.

1st No. 105 Argo, Fred, Bructor, Inverurie.
2nd No. 107 Grant, Mrs Norman, Green World, Copthorne, Sussex.
3rd No. 108 Reid, David, Firthview, Portgordon.

CLASS 27. PLYMOUTH ROCK—Any other Colour—Cock or Cockerel.

1st No. 109 Anthony, R., Euxton, Chorley, Lancashire (Cock, Buff).
2nd No. 113 Murdoch, James, Caplaw Farm, Neilston (Cock, Buff).
3rd No. 110 Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Cock, White).
V No. 112 Logan, Miss F. R., Mains of Kinmonth, Bridge of Earn (Cock, Buff).

CLASS 28. PLYMOUTH ROCK—Any other Colour—Hen or Pullet.

1st No. 114 Argo, Fred, Bructor, Inverurie (Hen, White).
2nd No. 115 Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Hen, White).
3rd No. 117 Murdoch, James, Caplaw Farm, Neilston (Hen, Buff).

CLASS 29. ORPINGTON—Black—Cock.

1st No. 118 Reid, David, Firthview, Portgordon.

CLASS 30. ORPINGTON—Black—Hen.

1st No. 119 Reid, David, Firthview, Portgordon.

CLASS 31. ORPINGTON—Any other Colour—Cock.

1st No. 120 Reid, David, Firthview, Portgordon (Buff).
2nd No. 121 Reith, Alexander, Barbieston Cottage, Dalrymple (Buff).

CLASS 32. ORPINGTON—Any other Colour—Hen.

1st No. 122 Anthony, R., Euxton, Chorley, Lancashire (White).
2nd No. 125 Reid, David, Firthview, Portgordon (Buff).
3rd No. 126 Reith, Alexander, Barbieston Cottage, Dalrymple (Buff).
V No. 124 Reid, David, Firthview, Portgordon (Buff).
H No. 123 Reid, D. N., Tullich, Lochcarron (Buff).

CLASS 33. ORPINGTON—Any Colour—Cockerel.

1st No. 127 Reid, David, Firthview, Portgordon (Buff).

CLASS 34. ORPINGTON—Any Colour—Pullet.

(*No Entry.*)

CLASS 35. WYANDOTTE—Gold or Silver—Cock.

1st No. 130 M'Crone, Robert, Holehouse, Kirkpatrick Durham (Silver).
2nd No. 131 Morgan, William, Balcurvie, Windygates (Gold).
3rd No. 134 Spensley, Herbert, Oaks Farm, Menston-in-Wharfedale (Silver).
V No. 128 Chrystal, John, Inverboyndie, Banff (Gold).
H No. 133 Philipson, J. M., Wyandotte Farm, Gilsland, Carlisle (Silver).
C No. 132 Petticrew, James, Strone, Dunoon (Gold).

CLASS 36. WYANDOTTE—Gold or Silver—Hen.

1st No. 140 Philipson, J. M., Wyandotte Farm, Gilsland, Carlisle (Silver).
2nd No. 141 Spensley, Herbert, Oaks Farm, Menston-in-Wharfedale (Silver).
3rd No. 138 Morgan, William, Balcurvie, Windygates (Silver).
V No. 135 Chrystal, John, Inverboyndie, Banff (Gold).
H No. 136 Fraser, John, Roslin, Auldearn, Nairn (Gold).
C No. 137 Hamilton, Thomas, Kirkton Kilns, Bathgate (Silver).

CLASS 37. WYANDOTTE—Gold or Silver—Cockerel.

(*No Entry.*)

CLASS 38. WYANDOTTE—Gold or Silver—Pullet.

1st	No. 142	Morgan, William, Balcurvie, Windygates (Gold).

CLASS 39. WYANDOTTE—White—Cock.

1st	No. 144	Binnie, W., Garth House, Denny.
2nd	No. 143	Anthony, R., Euxton, Chorley, Lancashire.
3rd	No. 148	Weir, James, Brickhouse, New Abbey Road, Dumfries.
V	No. 147	Morgan, William, Balcurvie, Windygates.
H	No. 146	Lawson, John, Elsrickle Mains, Biggar.
C	No. 149	Williamson Brothers, East Lochran, Blairadam.

CLASS 40. WYANDOTTE—White—Hen.

1st	No. 151	Binnie, W., Garth House, Denny.
2nd	No. 159	Weir, James, Brickhouse, New Abbey Road, Dumfries.
3rd	No. 150	Anthony, R., Euxton, Chorley, Lancashire.
V	No. 156	Reid, David, Firthview, Portgordon.
H	No. 160	Williamson Brothers, East Lochran, Blairadam.
C	No. 157	Reid, David, Firthview, Portgordon.

CLASS 41. WYANDOTTE—White—Cockerel.

1st	No. 161	Anthony, R., Euxton, Chorley, Lancashire.
2nd	No. 162	Binnie, W., Garth House, Denny.
3rd	No. 168	Weir, James, Brickhouse, New Abbey Road, Dumfries.
V	No. 166	Templeton, George, Knowe Farm, Auchinleck.
H	No. 165	Russell, John, Tinto View, Pettinain, Biggar.
C	No. 163	Hotham, Mrs Beaumont, Milne Graden Poultry Farm, Coldstream.

CLASS 42. WYANDOTTE—White—Pullet.

1st	No. 170	Binnie, W., Garth House, Denny.
2nd	No. 174	Thorburn & Steel, 34 High Street, Lockerbie.
3rd	No. 175	Weir, James, Brickhouse, New Abbey Road, Dumfries.
V	No. 172	Lawson, John, Elsrickle Mains, Biggar.
H	No. 169	Anthony, R., Euxton, Chorley, Lancashire.
C	No. 173	Reid, David, Firthview, Portgordon.

CLASS 43. WYANDOTTE—Partridge—Cock or Cockerel.

1st	No. 176	Argo, Fred, Bructor, Inverurie (Cock).
2nd	No. 178	Brown, Charles, Ivybank, Kintore (Cock).

CLASS 44. WYANDOTTE—Partridge—Hen or Pullet.

1st	No. 180	Morgan, William, Balcurvie, Windygates (Hen).
2nd	No. 179	Brown, Charles, Ivybank, Kintore (Hen).

CLASS 45. WYANDOTTE—Columbian—Cock or Cockerel.

1st	No. 181	Brown, Fred, Woodside, Grimscar, Huddersfield (Cock).
2nd	No. 182	Oag, William, Clatequoy, Thurso (Cockerel).

CLASS 46. WYANDOTTE—Columbian—Hen or Pullet.

1st	No. 183	Brown, Fred, Woodside, Grimscar, Huddersfield (Hen).
2nd	No. 184	Oag, William, Clatequoy, Thurso (Pullet).

CLASS 47. WYANDOTTE—Any other Colour—Cock or Cockerel.

1st	No. 186	Tocher, Charles, Balmore, Clunas, Nairn (Cock, Black).

CLASS 48. WYANDOTTE—Any other Colour—Hen or Pullet.

1st	No. 191	Wilson, Andrew, jun., Springbank Cottage, Lanark (Hen, Black).
2nd	No. 190	Tocher, Charles, Balmore, Clunas, Nairn (Hen, Black).
3rd	No. 189	Tocher, Charles, Balmore, Clunas, Nairn (Hen, Barred).
V	No. 187	Dow, A., Grafton House, Auchterarder (Hen, Black).

CLASS 49. RHODE ISLAND RED—Cock.

1st	No. 194	Morgan, William, Balcurvie, Windygates.
2nd	No. 199	Robertson, John, Craigend, Dundas Castle, South Queensferry.
3rd	No. 196	Petrie, Alexander, Mayfield, Airth Station.
V	No. 200	Rodger, David, Bonnyton Farm, Eaglesham.
H	No. 198	Reid, David, Firthview, Portgordon.
C	No. 192	Brown, Charles, Ivybank, Kintore.

CLASS 50. RHODE ISLAND RED—Hen.

1st	No. 204	Morgan, William, Balcurvie, Windygates.
2nd	No. 206	Reid, David, Firthview, Portgordon.
3rd	No. 210	Wallace, William, Monkrigg, Haddington.
V	No. 202	Carmichael, Daniel, Roadmeetings, Carluke.
H	No. 205	Petrie, Alexander, Mayfield, Airth Station.
C	No. 207	Reid, David, Firthview, Portgordon.

CLASS 51. RHODE ISLAND RED—Cockerel.

1st	No. 215	Wallace, William, Monkrigg, Haddington.
2nd	No. 212	O'Hanlon, S., Buttermere, Cockermouth.
3rd	No. 214	Robertson, John, Craigend, Dundas Castle, South Queensferry.

CLASS 52. RHODE ISLAND RED—Pullet.

1st	No. 221	Reid, David, Firthview, Portgordon.
2nd	No. 219	Morgan, William, Balcurvie, Windygates.
3rd	No. 222	Robertson, John, Craigend, Dundas Castle, South Queensferry.
V	No. 220	Reid, David, Firthview, Portgordon.

CLASS 53. SUSSEX—Light—Cock.

1st	No. 228	White, James, Carterhaugh Home Farm, Selkirk.
2nd	No. 227	Weir, James, Brickhouse, New Abbey Road, Dumfries.
3rd	No. 223	Anthony, R., Euxton, Chorley, Lancashire.
V	No. 224	Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent.
H	No. 226	Morgan, William, Balcurvie, Windygates.
C	No. 229	Wilkie, John, Orr Bridge Poultry Farm, Dysart.

CLASS 54. SUSSEX—Light—Hen.

1st	No. 230	Anthony, R., Euxton, Chorley, Lancashire.
2nd	No. 231	Argo, Fred, Bructor, Inverurie.
3rd	No. 238	Morgan, William, Balcurvie, Windygates.
V	No. 232	Austin, R., & Son, 10 King Street, Castle Douglas.
H	No. 239	Weir, James, Brickhouse, New Abbey Road, Dumfries.
C	No. 241	Wilkie, John, Orr Bridge Poultry Farm, Dysart.

CLASS 55. SUSSEX—Light—Cockerel.

1st	No. 243	Austin, R., & Son, 10 King Street, Castle Douglas.
2nd	No. 242	Anthony, R., Euxton, Chorley, Lancashire.
3rd	No. 245	Weir, James, Brickhouse, New Abbey Road, Dumfries.
V	No. 244	Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent.

CLASS 56. SUSSEX—Light—Pullet.

1st	No. 253	Weir, James, Brickhouse, New Abbey Road, Dumfries.
2nd	No. 248	Austin, R., & Son, 10 King Street, Castle Douglas.
3rd	No. 252	Morgan, William, Balcurvie, Windygates.
V	No. 254	Wilkie, John, Orr Bridge Poultry Farm, Dysart.
H	No. 251	Hamilton, Thomas, Kirkton Kilns, Bathgate.
C	No. 250	Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent.

CLASS 57. SUSSEX—Any other Variety—Cock.

1st	No. 255	Anthony, R., Euxton, Chorley, Lancashire (Speckled).
2nd	No. 258	Logan, Miss F. R., Mains of Kinmonth, Bridge of Earn (Brown).
3rd	No. 257	Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent (Speckled).
V	No. 256	Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent (Brown).

CLASS 58. SUSSEX—Any other Variety—Hen.

1st	No. 259	Anthony, R., Euxton, Chorley, Lancashire (Speckled).
2nd	No. 262	Logan, Miss F. R., Mains of Kinmonth, Bridge of Earn (Brown).
3rd	No. 260	Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent (Brown).
V	No. 261	Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent (Speckled).

CLASS 59. SUSSEX—Any other Variety—Cockerel.

1st	No. 263	Anthony, R., Euxton, Chorley, Lancashire (Speckled).
2nd	No. 265	Weir, James, Brickhouse, New Abbey Road, Dumfries (White).
V	No. 264	Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent (Brown).

CLASS 60. SUSSEX—Any other Variety—Pullet.

1st	No. 268	Weir, James, Brickhouse, New Abbey Road, Dumfries (White).
2nd	No. 266	Anthony, R., Euxton, Chorley, Lancashire (Speckled).
V	No. 267	Grant, Mrs M. A., Kirby Hall, Horton Kirby, Kent (Brown).

CLASS 61. DORKING—Coloured—Cock.

1st	No. 269	Aitkenhead, Charles, Carr House Farm, New Seaham.
2nd	No. 270	Major, A. J., Ditton, Langley, Bucks.

CLASS 62. DORKING—Coloured—Hen.

1st	No. 271	Aitkenhead, Charles, Carr House Farm, New Seaham.
2nd	No. 272	Major, A. J., Ditton, Langley, Bucks.
3rd	No. 273	Meikle, John, Camregan, Girvan.
V	No. 274	Morgan, William, Balcurvie, Windygates.

CLASS 63. DORKING—Coloured—Cockerel.

1st	No. 276	Major, A. J., Ditton, Langley, Bucks.
2nd	No. 275	Major, A. J., Ditton, Langley, Bucks.

CLASS 64. DORKING—Coloured—Pullet.

1st	No. 277	Major, A. J., Ditton, Langley, Bucks.
2nd	No. 278	Major, A. J., Ditton, Langley, Bucks.

CLASS 65. DORKING—Silver Grey—Cock.

1st	No. 279	Aitkenhead, Charles, Carr House Farm, New Seaham.
2nd	No. 281	Major, A. J., Ditton, Langley, Bucks.
3rd	No. 282	Mechie, John, Upper Greens, Auchtermuchty.
V	No. 285	Rogers, James, Forneth, Blairgowrie.
H	No. 283	Meikle, John, Camregan, Girvan.

CLASS 66. DORKING—Silver Grey—Hen.

1st	No. 290	Mechie, John, Upper Greens, Auchtermuchty.
2nd	No. 289	Mechie, John, Upper Greens, Auchtermuchty.
3rd	No. 287	Aitkenhead, Charles, Carr House Farm, New Seaham.
V	No. 291	Rogers, James, Forneth, Blairgowrie.

CLASS 67. DORKING—Silver Grey—Cockerel.

1st	No. 292	Catto, Adam, Poultry Yards, New Machar.
2nd	No. 294	Major, A. J., Ditton, Langley, Bucks.
3rd	No. 296	Rogers, James, Forneth, Blairgowrie.
V	No. 297	Rogers, James, Forneth, Blairgowrie.

CLASS 68. DORKING—Silver Grey—Pullet.

1st	No. 303	Rogers, James, Forneth, Blairgowrie.
2nd	No. 300	Major, A. J., Ditton, Langley, Bucks.
3rd	No. 301	Major, A. J., Ditton, Langley, Bucks.
V	No. 304	Rogers, James, Forneth, Blairgowrie.
H	No. 299	Catto, Adam, Poultry Yards, New Machar.
C	No. 298	Catto, Adam, Poultry Yards, New Machar.
C	No. 302	Mechie, John, Upper Greens, Auchtermuchty.

CLASS 69. SCOTS DUMPY—Cock.

1st	No. 305	Kerr, J. E., of Harviestoun, Dollar.
2nd	No. 306	Kerr, J. E., of Harviestoun, Dollar.

CLASS 70. SCOTS DUMPY—Hen.

1st	No. 311	Major, A. J., Ditton, Langley, Bucks.
2nd	No. 310	Kerr, J. E., of Harviestoun, Dollar.
3rd	No. 308	Brown, J. W., Rosehill, Summerston, Glasgow.
V	No. 309	Kerr, J. E., of Harviestoun, Dollar.

CLASS 71. SCOTS DUMPY—Cockerel.

1st	No. 312	Kerr, J. E., of Harviestoun, Dollar.

CLASS 72. SCOTS DUMPY—Pullet.

(*None forward.*)

CLASS 73. BARNEVELDER—Cock.

1st	No. 320	Morgan, William, Balcurvie, Windygates.
2nd	No. 319	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex.
3rd	No. 321	Petrie, Alexander, Mayfield, Airth Station.
V	No. 316	Binnie, W., Garth House, Denny.
H	No. 317	Elder, J. S., East Bearford, Haddington.

CLASS 74. BARNEVELDER—Hen.

1st	No. 323	Ferguson, George, & Son, 44 High Street, Clackmannan.
2nd	No. 324	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex.
3rd	No. 325	Petrie, Alexander, Mayfield, Airth Station.

CLASS 75. BARNEVELDER—Cockerel.

1st	No. 326	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex.

CLASS 76. BARNEVELDER—Pullet.

1st	No. 327	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex.

CLASS 77. INDIAN GAME—Cock.

1st No. 329 Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd No. 332 Murdoch, James, Caplaw Farm, Neilston.

CLASS 78. INDIAN GAME—Hen.

1st No. 333 Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd No. 335 Logan, Miss F. R., Mains of Kinmonth, Bridge of Earn.
3rd No. 337 Murdoch, James, Caplaw Farm, Neilston.

CLASS 79. INDIAN GAME—Cockerel.

1st No. 338 Black, William A. P., Croftfoot, Old Polmont.
2nd No. 339 Mellor, Miles, Hassocks, Honley, Huddersfield.
V No. 340 Miller, R. Scott, Clydeneuk, Uddingston.

CLASS 80. INDIAN GAME—Pullet.

1st No. 342 Black, William A. P., Croftfoot, Old Polmont.
2nd No. 341 Belbin, C. N., Nortonthorpe Hall, Huddersfield.
3rd No. 344 Miller, R. Scott, Clydeneuk, Uddingston.

CLASS 81. OLD ENGLISH GAME—Cock.

1st No. 345 Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd No. 347 Slater, A., The Old Vicarage, Lythe, Whitby.
3rd No. 349 West, George, Little Balgonie Farm, Cardenden.
V No. 348 Slater, A., The Old Vicarage, Lythe, Whitby.
H No. 350 West, George, Little Balgonie Farm, Cardenden.

CLASS 82. OLD ENGLISH GAME—Hen.

1st No. 351 Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd No. 354 Slater, A., The Old Vicarage, Lythe, Whitby.
3rd No. 353 Slater, A., The Old Vicarage, Lythe, Whitby.
V No. 356 West, George, Little Balgonie Farm, Cardenden.
H No. 355 West, George, Little Balgonie Farm, Cardenden.

CLASS 83. OLD ENGLISH GAME—Cockerel.

1st No. 357 Mellor, Miles, Hassocks, Honley, Huddersfield.

CLASS 84. OLD ENGLISH GAME—Pullet.

1st No. 358 Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd No. 359 Mellor, Miles, Hassocks, Honley, Huddersfield.
V No. 360 West, George, Little Balgonie Farm, Cardenden.

CLASS 85. BANTAM GAME—Old English—Cock.

1st No. 361 Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd No. 366 Ness, William, & Son, Rose Cottage, Kinglassie.
3rd No. 365 Ness, William, & Son, Rose Cottage, Kinglassie.
V No. 369 West, George, Little Balgonie Farm, Cardenden.
H No. 367 Sandison, Alfred, Bakery, Echt.
C No. 364 Morgan, William, Balcurvie, Windygates.

CLASS 86. BANTAM GAME—Old English—Hen.

1st	No. 374	Ness, William, & Son, Rose Cottage, Kinglassie.
2nd	No. 370	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
3rd	No. 375	Ness, William, & Son, Rose Cottage, Kinglassie.
V	No. 377	West, George, Little Balgonie Farm, Cardenden.
H	No. 378	West, George, Little Balgonie Farm, Cardenden.
C	No. 373	Morgan, William, Balcurvie, Windygates.
C	No. 376	Sandison, Alfred, Bakery, Echt.

CLASS 87. BANTAM GAME—Modern—Cock.

1st	No. 381	Logan, Miss F. R., Mains of Kinmonth, Bridge of Earn.
2nd	No. 380	Lindsay, Miss Lizzie Low, Coaltown, Markinch.
V	No. 379	Lindsay, Miss Lizzie Low, Coaltown, Markinch.

CLASS 88. BANTAM GAME—Modern—Hen.

1st	No. 383	Lindsay, Miss Lizzie Low, Coaltown, Markinch.
2nd	No. 382	Lindsay, Miss Lizzie Low, Coaltown, Markinch.

CLASS 89. BANTAM—Other than Game—Cock.

1st	No. 385	Anthony, R., Euxton, Chorley, Lancashire (Sebright).
2nd	No. 387	Binnie, W., Garth House, Denny (Wyandotte, Partridge).
3rd	No. 393	Mellor, Miles, Hassocks, Honley, Huddersfield (Indian Game).
V	No. 386	Beattie, Robert, 114 Lockerbie Road, Dumfries (Rosecomb, Black).
H	No. 392	Marshall, Andrew, Loganlea, Airth (Rhode Island Red).
C	No. 390	Laidler, James, Eastview, 112 Glasgow Road, Paisley (Belgian, Blue).
C	No. 391	Macintyre, John, Broombank, Blanefield (Indian Game).

CLASS 90. BANTAM—Other than Game—Hen.

1st	No. 399	Binnie, W., Garth House, Denny (Wyandotte, White).
2nd	No. 396	Anthony, R., Euxton, Chorley, Lancashire (Pekin, Black).
3rd	No. 403	Laidler, James, Eastview, 112 Glasgow Road, Paisley (Belgian, Blue).
V	No. 398	Belbin, C. N., Nortonthorpe Hall, Huddersfield (Jubilee Indian Game).
H	No. 405	Marshall, Andrew, Loganlea, Airth (Rhode Island Red).
C	No. 406	Martin, Mrs David, 14 Castlefield, Cupar (Sebright, Silver).
C	No. 407	Mellor, Miles, Hassocks, Honley, Huddersfield (Indian Game).

CLASS 91. BANTAM—Any Variety—Cockerel.

1st	No. 412	Delaney, James, Gateside, Fife (Modern Game).
2nd	No. 416	Laidler, James, Eastview, 112 Glasgow Road, Paisley (Old English).
3rd	No. 409	Belbin, C. N., Nortonthorpe Hall, Huddersfield (Old English Game).
V	No. 413	Delaney, James, Gateside, Fife (Modern Game).
H	No. 410	Binnie, W., Garth House, Denny (Wyandotte, White).
C	No. 411	Buchanan, John, Nirston, East Kilbride (Rosecomb, White).

CLASS 92. BANTAM—Any Variety—Pullet.

1st	No. 418	Binnie, W., Garth House, Denny (Wyandotte, White).
2nd	No. 420	Delaney, James, Gateside, Fife (Modern Game).
3rd	No. 417	Belbin, C. N., Nortonthorpe Hall, Huddersfield (Old English Game).
V	No. 419	Delaney, James, Gateside, Fife (Modern Game).
H	No. 421	Laidler, James, Eastview, 112 Glasgow Road, Paisley (Old English).
C	No. 422	Williamson Brothers, East Lochran, Blairadam (Wyandotte, White).

CLASS 93. ANY OTHER RECOGNISED BREED OF POULTRY—Cock.

1st	No. 426	Laidler, James, Eastview, 112 Glasgow Road, Paisley (Orloff, Mahogany).
2nd	No. 425	Kirkwood, R. A., Camelon Hotel, Falkirk (Brahma, Light).
3rd	No. 428	Peterkin, M. Grant, Grange Hall, Forres (Jubilee Game).
V	No. 429	Sandison, Alfred, Bakery, Echt (Sumatra Game).
H	No. 427	M'Vicar, Daniel, Burnside Cottage, Lennoxtown (Poland).
C	No. 424	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Cochin, White).

CLASS 94. ANY OTHER RECOGNISED BREED OF POULTRY—Hen.

1st	No. 430	Anthony, R., Euxton, Chorley, Lancashire (Langshan, Black).
2nd	No. 434	Kirkwood, R. A., Camelon Hotel, Falkirk (Brahma, Light).
3rd	No. 435	Laidler, James, Eastview, 112 Glasgow Road, Paisley (Orloff, Mahogany).
V	No. 433	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Cochin, White).
H	No. 436	M'Vicar, Daniel, Burnside Cottage, Lennoxtown (Poland).
C	No. 438	Reid, D. N., Tullich, Lochcarron (Campine, Silver).

CLASS 95. ANY OTHER RECOGNISED BREED OF POULTRY—Cockerel.

1st	No. 439	Anthony, R., Euxton, Chorley, Lancashire (Langshan, Black).
2nd	No. 441	Laidler, James, Eastview, 112 Glasgow Road, Paisley (Campine, Silver).
V	No. 440	Kirkwood, R. A., Camelon Hotel, Falkirk (Langshan, Black).

CLASS 96. ANY OTHER RECOGNISED BREED OF POULTRY—Pullet.

1st	No. 444	Laidler, James, Eastview, 112 Glasgow Road, Paisley (Campine, Silver).
2nd	No. 442	Anthony, R., Euxton, Chorley, Lancashire (Langshan, Black).
V	No. 443	Kirkwood, R. A., Camelon Hotel, Falkirk (Langshan, Black).

UTILITY POULTRY.

CLASS 97. LEGHORN—Any Variety—Cock or Cockerel.

1st	No. 455	Weir, James, Brickhouse, New Abbey Road, Dumfries (Cock, White).
2nd	No. 445	Binnie, W., Garth House, Denny (Cock, White).
3rd	No. 449	Glencross, R., & Son, Largo Cottage, Glencraig (Cock, Exchequer).
V	No. 454	Rodger, David, Bonnyton Farm, Eaglesham (Cock, White).
H	No. 450	Morgan, William, Balcurvie, Windygates (Cock, Brown).
C	No. 448	Gauldie, David C., Braeview, Dishland Street, Arbroath (Cock, Brown).
C	No. 451	Nowell Poultry Farm, Fossoway (Cock, White).

CLASS 98. ANY OTHER VARIETY—Light Breed—Cock or Cockerel.

1st	No. 456	Binnie, W., Garth House, Denny (Cock, Minorca, Black).
2nd	No. 457	Dent, John J., Whitehall, Maybole (Cock, Ancona).

CLASS 99. WYANDOTTE—Any Colour—Cock or Cockerel.

1st	No. 458	Binnie, W., Garth House, Denny (Cock, White).
2nd	No. 465	Weir, James, Brickhouse, New Abbey Road, Dumfries (Cock, White).
3rd	No. 462	Lawson, John, Elsrickle Mains, Biggar (Cock, White).
V	No. 466	Wilson, Ludovic, Thorn Farm, Dollar (Cock, White).
H	No. 464	Rodger, David, Bonnyton Farm, Eaglesham (Cock, White).
C	No. 461	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream (Cock, White).
C	No. 463	Lindsay, Mrs Broun, Colstoun, Haddington (Cock, White).

CLASS 100. ANY OTHER VARIETY—Heavy Breed—Cock or Cockerel.

1st	No. 472	Logan, Miss F. R., Mains of Kinmonth, Bridge of Earn (Cock, Plymouth Rock, Buff).
2nd	No. 469	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Cock, Barnevelder).
3rd	No. 474	O'Hanlon, S., Buttermere, Cockermouth (Cock, Rhode Island Red).
V	No. 479	Wilson, Ludovic, Thorn Farm, Dollar (Cock, Plymouth Rock).
H	No. 471	Lindsay, Mrs Broun, Colstoun, Haddington (Cock, Australorp, Black).
C	No. 475	Penny, James G., Sauchie Poultry Farm, Crieff (Cock, Rhode Island Red).
C	No. 476	Petrie, Alexander, Mayfield, Airth Station (Cock, Rhode Island Red).
C	No. 477	Reid, David, Firthview, Portgordon (Cock, Sussex, Light).

CLASS 101. LEGHORN—White—Hen or Pullet.

1st	No. 481	Binnie, W., Garth House, Denny (Hen).
2nd	No. 490	Reid, David, Firthview, Portgordon (Hen).
3rd	No. 488	Lindsay, Mrs Broun, Colstoun, Haddington (Hen).
V	No. 483	Dempsey, James L., Balquhomrie, Leslie (Hen).
H	No. 485	Elliot, Tom, Eildon Poultry Farm, Haddington (Hen).
C	No. 487	Gauldie, David C., Braevue, Dishland Street, Arbroath (Hen).

CLASS 102. LEGHORN—Any other Colour—Hen or Pullet.

1st	No. 498	Steele, W., Dalry, Kirkcudbrightshire (Hen, Black).
2nd	No. 495	Penny, James G., Sauchie Poultry Farm, Crieff (Hen, Black).
3rd	No. 494	Glencross, R., & Son, Largo Cottage, Glencraig (Hen, Exchequer).
V	No. 497	Ross, J. C., Stirling Road, Larbert (Hen, Black).
H	No. 493	Fotheringham, W. G., Westerton, Blackford (Hen, Brown).
C	No. 496	Reid, D. N., Tullich, Lochcarron (Hen, Exchequer).

CLASS 103. WYANDOTTE—Any Colour—Hen or Pullet.

1st	No. 506	Lawson, John, Elsrickle Mains, Biggar (Hen, White).
2nd	No. 500	Binnie, W., Garth House, Denny (Hen, White).
3rd	No. 508	Paterson, Alexander, Blankets, Oldmeldrum (Hen, White).
V	No. 507	Paterson, Alexander, Blankets, Oldmeldrum (Hen, White).
H	No. 513	Reid, David, Firthview, Portgordon (Hen, White).
C	No. 502	Dickson, William, Sprouston Cottages, Newtown St Boswells (Hen, White).
C	No. 504	Elliot, Tom, Eildon Poultry Farm, Haddington (Pullet, White).
C	No. 510	Paterson, Alexander, Blankets, Oldmeldrum (Hen, White).
C	No. 512	Peterkin, M. Grant, Grange Hall, Forres (Pullet, White).

CLASS 104. RHODE ISLAND RED—Hen or Pullet.

1st	No. 520	Petrie, Alexander, Mayfield, Airth Station (Hen).
2nd	No. 522	Templeton, George, Knowe Farm, Auchinleck (Hen).
3rd	No. 523	Wallace, William, Monkrigg, Haddington (Hen).
V	No. 519	O'Hanlon, S., Buttermere, Cockermouth (Hen).
H	No. 517	Miller, Mrs Violet, The Grange, Muckhart, Dollar (Hen).
C	No. 521	Robertson, John, Craigend, Dundas Castle, South Queensferry (Pullet).

CLASS 105. BARNEVELDER—Hen or Pullet.

1st	No. 525	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Hen).
2nd	No. 524	Cameron, Mrs Allan, Darris, Dores, Inverness (Hen).

CLASS 106. ROCK—Any Colour—Hen or Pullet.

1st	No. 526	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Hen, White).
2nd	No. 527	Wilson, Ludovic, Thorn Farm, Dollar (Hen, Grey).

CLASS 107. ANY OTHER VARIETY—Hen or Pullet.

1st	No. 533	Dent, John J., Whitehill, Maybole (Hen, Ancona).
2nd	No. 528	Austin, R., & Son, 10 King Street, Castle Douglas (Hen, Sussex, Light).
3rd	No. 536	Major, A. J., Ditton, Langley, Bucks. (Hen, Dorking, Silver).
V	No. 530	Binnie, W., Garth House, Denny (Hen, Minorca, Black).
H	No. 532	Cameron, Mrs Allan, Darris, Dores, Inverness (Hen, Sussex, Light).
C	No. 529	Bell-Irving, Mrs, Whitehill, Lockerbie (Hen, Sussex, Light).
C	No. 535	Macgregor, James Scott, Bridgend Bakery, Greenlaw (Hen, Minorca).

CLASS 108. ANY CROSS FOR LAYING PURPOSES—Hen.

1st	No. 541	Peterkin, M. Grant, Grange Hall, Forres.
2nd	No. 544	Rodger, David, Bonnyton Farm, Eaglesham.
3rd	No. 539	Kirkwood, R. A., Camelon Hotel, Falkirk.
V	No. 543	Ramsay, William, Muirhouse Cottage, Crosshouse.
H	No. 540	Morgan, William, Balcurvie, Windygates.

CLASS 109. ANY CROSS FOR LAYING PURPOSES—Pullet.

1st	No. 546	Penny, James G., Sauchie Poultry Farm, Crieff.
2nd	No. 545	Morgan, William, Balcurvie, Windygates.

CLASS 110. DUCKS—Aylesbury—Drake.

1st	No. 549	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 551	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 550	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 111. DUCKS—Aylesbury—Duck.

1st	No. 552	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 553	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
3rd	No. 555	Kirkwood, R. A., Camelon Hotel, Falkirk.
V	No. 554	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 112. DUCKS—Aylesbury—Drake (Young).

1st	No. 556	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 558	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 557	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 113. DUCKS—Aylesbury—Duck (Young).

1st	No. 560	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 561	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 114. DUCKS—Orpington—Drake.

1st	No. 566	Logan, Miss F. R., Mains of Kinmonth, Bridge of Earn.
2nd	No. 563	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
3rd	No. 564	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 565	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 115. DUCKS—Orpington—Duck.

1st	No. 570	Logan, Miss F. R., Mains of Kinmonth, Bridge of Earn.
2nd	No. 567	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
3rd	No. 568	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 569	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 116. DUCKS—Orpington—Drake (Young).

1st	No. 571	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 572	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 573	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 117. DUCKS—Orpington—Duck (Young).

1st	No. 574	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 575	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 576	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 118. DUCKS—Indian Runner—Drake.

1st	No. 578	Argo, Fred, Bructor, Inverurie.
2nd	No. 589	Smith, Matthew, Netherholm House, Dumfries.
3rd	No. 587	Shewan, Alexander, Longhillock, Alves, Forres.
V	No. 577	Anthony, R., Euxton, Chorley, Lancashire.
H	No. 588	Smith, Matthew, Netherholm House, Dumfries.
C	No. 580	Dalgleish, James P., of Westgrange, Newmills, Dunfermline.
C	No. 582	Hewetson, Rev. J., Burbage Vicarage, Buxton.

CLASS 119. DUCKS—Indian Runner—Duck.

1st	No. 590	Anthony, R., Euxton, Chorley, Lancashire.
2nd	No. 594	Hewetson, Rev. J., Burbage Vicarage, Buxton.
3rd	No. 597	Smith, Matthew, Netherholm House, Dumfries.
V	No. 593	Fotheringham, W. G., Westerton, Blackford.
C	No. 592	Argo, Fred, Bructor, Inverurie.

CLASS 120. DUCKS—Any other Variety—Drake.

1st	No. 601	Keir, William, Linplum Home Farm, Haddington (Rouen).
2nd	No. 598	Anthony, R., Euxton, Chorley, Lancashire (Rouen).
3rd	No. 599	Argo, Fred, Bructor, Inverurie (Muscovy).
V	No. 602	Kemp, A. D., Riddell Mill, Lilliesleaf (Tufted, Khaki).

CLASS 121. DUCKS—Any other Variety—Duck.

1st	No. 603	Anthony, R., Euxton, Chorley, Lancashire (Rouen).
2nd	No. 605	Keir, William, Linplum Home Farm, Haddington (Rouen).
3rd	No. 606	Kemp, A. D., Riddell Mill, Lilliesleaf (Tufted, Silver).

CLASS 122. GEESE—Gander.

1st	No. 608	Rottenburg, F. A., of Lochlane, Crieff.

CLASS 123. GEESE—Goose.

1st	No. 612	Shewan, Alexander, Longhillock, Alves, Forres.
2nd	No. 609	Argo, Fred, Bructor, Inverurie.
3rd	No. 611	Rottenburg, F. A., of Lochlane, Crieff.

CLASS 124. TURKEYS—Cock.

1st	No. 613	Andrew, Mrs Jessie, South Tulloford, Oldmeldrum.
2nd	No. 614	Hamilton, Thomas, Kirkton Kilns, Bathgate.
3rd	No. 618	Shewan, Alexander, Longhillock, Alves, Forres.
V	No. 617	Rottenburg, F. A., of Lochlane, Crieff.
H	No. 616	Rottenburg, F. A., of Lochlane, Crieff.

CLASS 125. TURKEYS—Hen.

1st	No. 624	Rottenburg, F. A., of Lochlane, Crieff.
2nd	No. 625	Shewan, Alexander, Longhillock, Alves, Forres.
3rd	No. 623	Rottenburg, F. A., of Lochlane, Crieff.

TABLE POULTRY.

CLASS 126. TABLE FOWLS—Any Pure Breed—Cock.

1st	No. 628	Mechie, John, Upper Greens, Auchtermuchty (Dorking).
2nd	No. 630	Wilkie, Joseph, Albion House, Dysart (Sussex, Light).
3rd	No. 626	Binnie, W., Garth House, Denny (Wyandotte, White).
V	No. 629	Robertson, John, Craigend, Dundas Castle, South Queensferry (Rhode Island Red).

CLASS 127. TABLE FOWLS—Any Pure Breed—Cockerel.

1st	No. 634	Wilkie, Joseph, Albion House, Dysart (Sussex, Light).
2nd	No. 633	Robertson, John, Craigend, Dundas Castle, South Queensferry (Rhode Island Red).
3rd	No. 631	Cameron, Mrs Allan, Darris, Dores, Inverness (Sussex, Light).

CLASS 128. TABLE FOWLS—Any Cross—Cock.

1st	No. 636	Penny, James G., Sauchie Poultry Farm, Crieff (Game—Dorking).

CLASS 129. TABLE FOWLS—Any Cross—Cockerel.

1st	No. 639	Penny, James G., Sauchie Poultry Farm, Crieff (Game—Sussex).
2nd	No. 638	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream (Game—Sussex).
3rd	No. 637	Black, William A. P., Croftfoot, Old Polmont (Indian Game—Sussex).
V	No. 640	Wilkie, Joseph, Albion House, Dysart (Rhode Island Red—Sussex, Light).

CLASS 130. TABLE FOWLS—Any Pure Breed or Cross—Pair of Pullets.

1st	No. 641	Black, William A. P., Croftfoot, Old Polmont (Indian Game—Sussex).
2nd	No. 642	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream (Game—Sussex).
3rd	No. 644	Wilkie, Joseph, Albion House, Dysart (Rhode Island Red—Sussex, Light).

EGGS

CLASS 1. One dozen HEN EGGS, white.—PREMIUMS, £1, 15s., and 10s.

1st	No. 10	Monteith, Mrs Helen, The Island, Bothkennar, Falkirk.
2nd	No. 1	Black, Miss Isa, Croftfoot, Polmont.
3rd	No. 2	Blair, Mrs W. E., Blairholm Goat and Poultry Farm, Kirknewton.
V	No. 7	Guthrie, David W., Jesmond, Bridge of Earn.
H	No. 8	Macgregor, James Scott, Bridgend Bakery, Greenlaw.
C	No. 6	Gauldie, Mrs D. C., Braevue, Dishland Street, Arbroath.

CLASS 2. One dozen HEN EGGS—brown or tinted.—PREMIUMS, £1, 15s., and 10s.

1st	No. 15	Black, Miss Isa, Croftfoot, Polmont.
2nd	No. 28	Shanks, Miss, Broomhill, Denny.
3rd	No. 23	Nowell Poultry Farm, Fossoway.
V	No. 26	Penny, James G., Sauchie Poultry Farm, Crieff.
H	No. 22	Monteith, Mrs Helen, The Island, Bothkennar, Falkirk.
C	No. 24	Paterson, Alexander, Blankets, Oldmeldrum.

CLASS 3. One dozen DUCK EGGS.—PREMIUMS, £1, 15s., and 10s.

1st	No. 34	Monteith, Mrs Helen, The Island, Bothkennar, Falkirk.
2nd	No. 31	Duncan, Mrs, Langhowe, Spey Bay, Morayshire.
3rd	No. 30	Black, Miss Isa, Croftfoot, Polmont.
V	No. 32	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
C	No. 33	Macgregor, James Scott, Bridgend Bakery, Greenlaw.

CLASS 4. One dozen TURKEY EGGS.—PREMIUMS, £1, 15s., and 10s.

1st	No. 36	Andrew, Mrs Jessie, South Tulloford, Oldmeldrum.
2nd	No. 38	Duncan, Mrs, Langhowe, Spey Bay, Morayshire.
3rd	No. 40	Sunter, James E. C., Ben Oir, Carnock Road, Dunfermline.
C	No. 37	Black, Miss Isa, Croftfoot, Polmont.

FUR-PRODUCING RABBITS

First Premium—Fifteen Shillings. Second Premium—Ten Shillings. Third Premium—Five Shillings. In each Class in which there are less than four entries the Third Prize of Five Shillings will not be awarded; where there are ten or more entries a Fourth Prize of 2s. 6d. may be awarded.

Champion Silver Medal *for best exhibit in the Rabbit Classes.*

No. 52 Marwick, D. Kenmure, Boundstone Fur Farm, Farnham (Buck).

CLASS 1. ANGORA, over 5 months.

1st	No. 1	Beattie, John G., Afton Villa, New Cumnock (Buck).
2nd	No. 5	Michie, Miss Lizzie S. L., Rockleaze, Baldwin Crescent, Kirkcaldy (Doe).
3rd	No. 3	Frail, Mrs Peter, jun., Spylaw Farm, Colinton (Doe).
V	No. 6	Stewart, Mrs Rollo, 17 Kingsburgh Road, Edinburgh (Doe).

CLASS 2. ANGORA, not exceeding 5 months.

1st	No. 7	Beattie, John G., Afton Villa, New Cumnock (Doe).
2nd	No. 13	Pickard, Mrs C. L., The Cottage, Carlops.
3rd	No. 9	Chirnside & Pendrich, Kilspindie, Aberlady (Doe).
V	No. 8	Cessford, Miss R. L., Lugton House, Dalkeith (Buck).
H	No. 11	Frail, Mrs Peter, jun., Spylaw Farm, Colinton (Doe).
C	No. 12	Frail, Mrs Peter, jun., Spylaw Farm, Colinton (Doe).

CLASS 3. CHINCHILLA—Buck, over 5 months.

1st	No. 15	Beattie, John G., Afton Villa, New Cumnock.
2nd	No. 21	Ramage, Stephen, Howden Toll, Mid-Calder.
3rd	No. 18	M'Morran, William, 81 Northgate, Peebles.
4th	No. 17	Forrest, George, 109 Quarry Street, Hamilton.
V	No. 14	Anderson, William R., 104 Saughtonhall Drive, Edinburgh.
H	No. 23	Wright, Ebenezer G., Dunira, Cults, Aberdeenshire.
C	No. 19	O'Callaghan-Westropp, Miss, Craiglockhart College, Edinburgh.
C	No. 20	Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.
C	No. 22	Wilson, Alexander S. K., Meadow Park, Winchburgh.

CLASS 4. CHINCHILLA—Doe, over 5 months.

1st	No. 28	M'Crimmon, Mrs Jessie, Meadowside, Stonehouse.
2nd	No. 25	Blane, John, 10 Hill Street, Kilmarnock.
3rd	No. 26	Grieve, James, Dunearn, Eldindean Place, Bonnyrigg.
V	No. 30	Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.
H	No. 32	Wright, Ebenezer G., Dunira, Cults, Aberdeenshire.
C	No. 24	Beattie, John G., Afton Villa, New Cumnock.

CLASS 5. CHINCHILLA—Buck or Doe, not exceeding 5 months.

1st	No. 34	Allan, Charles, 3 Montgomerie Road, Prestwick (Buck).
2nd	No. 36	Beattie, John G., Afton Villa, New Cumnock (Buck).
3rd	No. 47	Wright, Ebenezer G., Dunira, Cults, Aberdeenshire.
4th	No. 33	Aird, Robert, 10 Somerset Road, Ayr (Buck).
V	No. 45	M'Crimmon, Mrs Jessie, Meadowside, Stonehouse (Doe).
H	No. 37	Bell, Daniel, 87 Northgate, Peebles (Buck).
C	No. 44	Hogg, Miss M. Marguerite, The Border Rabbitry, Coldstream (Doe).
C	No. 46	Wilson, Alexander S. K., Meadow Park, Winchburgh (Buck).

CLASS 6. BEVEREN, over 5 months.

1st	No. 52	Marwick, D. Kenmure, Boundstone Fur Farm, Farnham (Buck).
2nd	No. 49	Dall, Andrew, 78 Kidd Street, Kirkcaldy (Doe).
3rd	No. 51	Harris, George, 14 Orchard Lane, Dysart (Doe).
V	No. 54	Scott & Ketchen, 63 Northgate, Peebles (Doe).
H	No. 48	Dall, Andrew, 78 Kidd Street, Kirkcaldy (Buck).
C	No. 55	Waitt, John, 57 Marionville Road, Edinburgh (Buck).

CLASS 7. BEVEREN, not exceeding 5 months.

1st	No. 59	Sayers, C. O., Forest House, Mitcham (Buck).
2nd	No. 58	Harris, George, 14 Orchard Lane, Dysart (Buck).
V	No. 57	Duthil, A., 19 Derby Street, Dundee (Buck).

CLASS 8. REX, any Colour, over 5 months.

1st	No. 63	Graham, Mrs E. Balfour, Levenbank, Leven (Doe—Grey).
2nd	No. 65	Graham, Mrs E. Balfour, Levenbank, Leven (Buck—Sepia).
3rd	No. 64	Graham, Mrs E. Balfour, Levenbank, Leven (Buck—White).
V	No. 67	Hendry, Miss Cochran E., The Bungalow, Inverkeithing (Doe—Grey).
H	No. 62	Graham, Mrs E. Balfour, Levenbank, Leven (Buck—Brown).
C	No. 66	Hendry, Miss Cochran E., The Bungalow, Inverkeithing (Buck—Brown).

CLASS 9. REX, any Colour, not exceeding 5 months.

1st	No. 69	Bell, Daniel, 87 Northgate, Peebles (Buck—Dark Grey).
2nd	No. 73	Hendry, Miss Cochran E., The Bungalow, Inverkeithing (Buck—Brown).
3rd	No. 72	Graham, Mrs E. Balfour, Levenbank, Leven (Doe—Grey).
V	No. 70	Bell, Daniel, 87 Northgate, Peebles (Doe—Light Grey).
H	No. 74	Hendry, Miss Cochran E., The Bungalow, Inverkeithing (Doe—Grey).
C	No. 71	Graham, Mrs E. Balfour, Levenbank, Leven (Buck—Grey).
C	No. 75	Hutchinson, A. F., & Young, Sheddon Park Rabbitry, Kelso (Buck—Grey-Brown).

CLASS 10. HAVANA, over 5 months.

1st	No. 77	Tosh, Alexander, 2 Kinnear Lane, Laurencekirk (Buck).

CLASS 11. SABLE MARTEN, over 5 months.

1st No. 82 Ritchie, Ebenezer, 15 Hepburn Street, West Clepington, Dundee (Buck).
2nd No. 80 Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.
3rd No. 84 Todd, Mrs Mary, Kenilworth, Lauder (Buck).
V No. 83 Scott, R. J., Pirn Road, Innerleithen (Doe).
H No. 79 Graham, Mrs E. Balfour, Levenbank, Leven (Buck).
C No. 78 Beattie, John G., Afton Villa, New Cumnock (Buck).
C No. 81 Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.

CLASS 12. SABLE MARTEN, not exceeding 5 months.

1st No. 89 Todd, Mrs Mary, Kenilworth, Lauder (Buck).
2nd No. 88 Todd, Mrs Mary, Kenilworth, Lauder (Buck).
3rd No. 90 Todd, Mrs Mary, Kenilworth, Lauder (Buck).
V No. 87 Scott, R. J., Pirn Road, Innerleithen (Buck).
H No. 85 Bonsor, R. B., 62 High Street, Peebles (Doe).
C No. 86 Michie, Miss Lizzie S. L., Rockleaze, Baldwin Crescent, Kirkcaldy (Doe).

CLASS 13. SABLE SIAMESE, over 5 months.

1st No. 96 Stewart, Mrs Rollo, 17 Kingsburgh Road, Edinburgh (Buck).
2nd No. 92 Graham, Mrs E. Balfour, Levenbank, Leven (Buck).
3rd No. 98 Ritchie, Ebenezer, 15 Hepburn Street, West Clepington, Dundee (Doe).
V No. 94 Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.
H No. 97 Stewart, Mrs Rollo, 17 Kingsburgh Road, Edinburgh (Doe).
C No. 91 Chirnside & Pendrich, Kilspindie, Aberlady (Buck).
C No. 95 Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.

CLASS 14. SABLE SIAMESE, not exceeding 5 months.

1st No. 99 Stewart, Mrs Rollo, 17 Kingsburgh Road, Edinburgh (Buck).
2nd No. 100 Stewart, Mrs Rollo, 17 Kingsburgh Road, Edinburgh (Buck).

CLASS 15. SQUIRREL, over 5 months.

1st No. 101 Beattie, John G., Afton Villa, New Cumnock (Buck).
2nd No. 103 Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.
3rd No. 102 Cessford, Miss R. L., Lugton House, Dalkeith (Buck).
V No. 105 Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.
H No. 104 Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.

CLASS 16. SILVER FOX, any Colour, over 5 months.

1st No. 111 Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.
2nd No. 110 Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.
3rd No. 106 Cessford, Miss R. L., Lugton House, Dalkeith (Doe—Black).
V No. 109 Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.
H No. 108 Imrie, David James, Linden Bank, Peebles (Buck—Blue).

CLASS 17. SILVER FOX, any Colour, not exceeding 5 months.

1st	No. 113	Duthil, A., 19 Derby Street, Dundee (Buck—Black and White).
2nd	No. 114	Ritchie, Ebenezer, 15 Hepburn Street, West Clepington, Dundee (Buck—Blue).

CLASS 18. Any Variety, over 5 months, for which a Class is not provided.

1st	No. 121	Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.
2nd	No. 119	Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.
3rd	No. 116	Beattie, John G., Afton Villa, New Cumnock (Doe—Smoke Beige).
V	No. 122	Stewart, Mrs Rollo, 17 Kingsburgh Road, Edinburgh (Buck—Agouti).
H	No. 115	Beattie, John G., Afton Villa, New Cumnock (Buck—Smoke Beige).
C	No. 117	Lamont, Miss N., Heugh Farm, North Berwick (Buck—English).
C	No. 120	Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops.

CLASS 19. Any Variety, not exceeding 5 months, for which a Class is not provided.

1st	No. 123	Dempster, John, 16 Quality Street, Kirkcaldy (Buck—Blue Tan).
2nd	No. 125	Lamont, Miss N., Heugh Farm, North Berwick (Doe—English).
V	No. 124	Hutchinson, A. F., & Young, Sheddon Park Rabbitry, Kelso (Doe—Dutch).

HONEY, &c.

OPEN CLASSES.

Silver and Bronze Medals will be awarded by the Scottish Bee-Keepers' Association *to the First and Second winners of the greatest number of points in the Classes for Honey and Wax only, calculated on the following basis : 1st Prize, 3 points ; 2nd Prize, 2 points ; 3rd Prize, 1 point.*

Silver Medal—Allan, George C., 7 Springvale Road, Ayr (22 points).

Bronze Medal—Scott, George, Waterton, Cumnock (19 points).

Championship Cup, value £5, 5s. *This Cup has been gifted by the Rev. John Beveridge, M.B.E., B.D., Edinburgh.*

Allan, George C., 7 Springvale Road, Ayr (22 points).

CLASS 1. Collection of APPLIANCES suitable for a beginner's outfit for Bee-keeping. A card naming all the articles, along with the price at which they will be supplied for one year from date, to be fixed to the exhibit.—PREMIUMS, 20s., 15s., 10s.

1st	No. 4	Steele & Brodie, R., Bee Appliance Works, Wormit.
2nd	No. 1	Burtt & Son, Stroud Road, Gloucester.
3rd	No. 3	Moffat, David, Marion Terrace, Manse Road, Wishaw.

CLASS 2. Best and most complete FRAME HIVE for general use, with any improvements. Unpainted.—PREMIUMS, 20s., 15s., 10s.

1st	No. 11	Steele & Brodie, R., Bee Appliance Works, Wormit.
2nd	No. 10	Steele & Brodie, R., Bee Appliance Works, Wormit.
3rd	No. 8	Lee, Robert, Beehive Works, George Street, Uxbridge.
H	No. 6	Burtt & Son, Stroud Road, Gloucester.

CLASS 3. Best and most complete HIVE. Unpainted. Price not to exceed 35s.—PREMIUMS, 20s., 15s., 10s.

1st	No. 17	Steele & Brodie, R., Bee Appliance Works, Wormit.
2nd	No. 13	Burtt & Son, Stroud Road, Gloucester.
3rd	No. 15	Lee, Robert, Beehive Works, George Street, Uxbridge.
V	No. 16	Moffat, David, Marion Terrace, Manse Road, Wishaw.

CLASS 4. Six Sections of COMB HONEY, excluding Heather Honey.—PREMIUMS, 20s., 15s., 10s.

1st	No. 19	Allan, George C., 7 Springvale Road, Ayr.
2nd	No. 24	Scott, George, Waterton, Cumnock.
3rd	No. 22	Hutchison, Mrs, Kinloch House, Collessie.
C	No. 23	Pate, Thomas, Hopefield, Milnathort.

CLASS 5. Six Sections of HEATHER HONEY.—Premiums, 20s., 15s., 10s.

1st	No. 30	Elliot, Matthew, 42 Ardconnel Street, Inverness.
2nd	No. 32	Scott, George, Waterton, Cumnock.
3rd	No. 26	Allan, George C., 7 Springvale Road, Ayr.
V	No. 31	Pate, Thomas, Hopefield, Milnathort.
H	No. 28	Brown, Thomas C., Helenslea, St Ninians.

CLASS 6. Six Jars of RUN or EXTRACTED LIGHT-COLOURED HONEY, approximate weight 6 lb.—Premiums, 20s., 15s., 10s.

1st	No. 40	Scott, George, Waterton, Cumnock.
2nd	No. 33	Allan, George C., 7 Springvale Road, Ayr.
3rd	No. 36	Brown, Thomas C., Helenslea, St Ninians.
V	No. 42	Weston, William, Crichton Hall, Dumfries.
H	No. 38	Milne, Alexander, Upper Affloch, Dunecht.
C	No. 35	Brown, John, 21 North End, Cambusbarron, Stirling.

CLASS 7. Six Jars of RUN or EXTRACTED MEDIUM or DARK-COLOURED HONEY, excluding Heather Honey, approximate weight 6 lb.—Premiums, 20s., 15s., 10s.

1st	No. 46	Scott, George, Waterton, Cumnock.
2nd	No. 43	Allan, George C., 7 Springvale Road, Ayr.
3rd	No. 48	Weston, William, Crichton Hall, Dumfries.

CLASS 8. Six Jars of PRESSED HEATHER HONEY in liquid form, approximate weight 6 lb.—Premiums, 20s., 15s., 10s.

1st	No. 56	Thomson, Miss M., 4 Burn Street, Dalbeattie.
2nd	No. 52	Pate, Thomas, Hopefield, Milnathort.
3rd	No. 55	Smith, William W., Sunnybrae Lodge, Walkerburn.
V	No. 53	Scott, George, Waterton, Cumnock.

CLASS 9. Six Jars of GRANULATED HONEY, approximate weight 6 lb.—Premiums, 20s., 15s., 10s.

1st	No. 61	Cumming, James A., North Middlemuir, Methlick.
2nd	No. 65	Pate, Thomas, Hopefield, Milnathort.
3rd	No. 69	Thomson, Miss M., 4 Burn Street, Dalbeattie.
H	No. 60	Brown, Thomas C., Helenslea, St Ninians.

CLASS 10. Two Shallow Frames of COMB HONEY for extracting purposes.—Premiums, 20s., 15s., 10s.

1st	No. 73	Scott, George, Waterton, Cumnock.
2nd	No. 70	Allan, George C., 7 Springvale Road, Ayr.
3rd	No. 71	Brown, Thomas C., Helenslea, St Ninians.

CLASS 11. PRODUCTS made with the aid of Honey.—Premiums, 20s., 15s., 10s.

1st	No. 76	Wilson, Miss Margaret, St Margaret's, Tillicoultry.
2nd	No. 75	Brown, Thomas C., Helenslea, St Ninians.

CLASS 12. Best display of HONEY in any form suitable for a shop window in space 4 feet by 4 feet. Weight of Honey not to exceed 40 lb.—PREMIUMS, 60s., 30s., 20s.

1st	No. 77	Allan, George C., 7 Springvale Road, Ayr.
2nd	No. 78	Brown, Thomas C., Helenslea, St Ninians.
3rd	No. 79	Pate, Thomas, Hopefield, Milnathort.

CLASS 13. Best exhibit of not less than 1 lb. of WAX in any form. PREMIUMS, 20s., 15s., 10s.

1st	No. 85	M'Guffog, A. D., Mabie, Dumfries.
2nd	No. 86	Munro, James D., Wester Elchies, Aberlour.
3rd	No. 87	Thomson, Miss M., 4 Burn Street, Dalbeattie.
V	No. 88	Todd, James, 65 Torrisdale Street, Crosshill, Glasgow.
H	No. 80	Allan, George C., 7 Springvale Road, Ayr.

CLASS 14. Best exhibit of not less than 1 lb. of WAX made into shapes for retail trade and over-counter trade. Convenience in packing to be taken into consideration.—PREMIUMS, 20s., 15s., 10s.

1st	No. 94	Munro, James D., Wester Elchies, Aberlour.
2nd	No. 91	Brown, Thomas C., Helenslea, St Ninians.
3rd	No. 97	Todd, James, 65 Torrisdale Street, Crosshill, Glasgow.
V	No. 95	Park, David C., Seton Hill, Longniddry.
H	No. 90	Allan, George C., 7 Springvale Road, Ayr.

CLASS 15. OBSERVATORY HIVE, with Queen and Bees—two or more frames.—PREMIUMS, 50s., 30s., 20s.

1st	No. 100	Smith, William W., Sunnybrae Lodge, Walkerburn.
2nd	No. 99	Hutton, William A., 44 Whirlbut Crescent, Dunfermline.
3rd	No. 98	Brown, Thomas C., Helenslea, St Ninians.

CLASS 16. OBSERVATORY HIVE, with Queen and Bees—one frame, no super.—PREMIUMS, 40s., 30s., 15s.

2nd	No. 102	Kilgour, James D., 88 St Leonard Street, Dunfermline.
3rd	No. 101	Amos, Thomas Fleming, 212 St James Street, Glasgow.

CONFINED TO SCOTTISH EXHIBITORS.

CLASS 17. One standard Frame of COMB HONEY for extracting purposes.—PREMIUMS, 20s., 15s., 10s.

1st	No. 103	Allan, George C., 7 Springvale Road, Ayr.

CLASS 18. Six Sections of COMB HONEY, excluding Heather Honey.—PREMIUMS, 20s., 15s., 10s.

1st	No. 106	Allan, George C., 7 Springvale Road, Ayr.
2nd	No. 113	Scott, George, Waterton, Cumnock.
3rd	No. 114	Ure-Panton, W., Clydesdale Bank House, Milnathort.
V	No. 111	Hutchison, Mrs, Kinloch House, Collessie.
H	No. 107	Cumming, James A., North Middlemuir, Methlick.

CLASS 19. Six Sections of HEATHER HONEY.—PREMIUMS, 30s., 20s., 10s.

1st	No. 115	Allan, George C., 7 Springvale Road, Ayr.
2nd	No. 121	Scott, George, Waterton, Cumnock.
3rd	No. 118	Elliot, Matthew, 42 Ardconnel Street, Inverness.
V	No. 120	Pate, Thomas, Hopefield, Milnathort.
H	No. 119	Park, David C., Seton Hill, Longniddry.

CLASS 20. Six Jars of RUN or EXTRACTED MEDIUM or DARK-COLOURED HONEY, excluding Heather Honey, approximate weight 6 lb.—PREMIUMS, 30s., 20s., 10s.

1st	No. 130	Weston, William, Crichton Hall, Dumfries.
2nd	No. 123	Brown, James, Oakfield, Catrine.
3rd	No. 129	Scott, George, Waterton, Cumnock.
V	No. 127	Murray, Alexander, c/o A. Parker, 14 Grange Road, Kilmarnock.
H	No. 122	Allan, George C., 7 Springvale Road, Ayr.

CLASS 21. Six Jars of RUN or EXTRACTED LIGHT-COLOURED HONEY, approximate weight 6 lb.—PREMIUMS, 30s., 20s., 10s.

1st	No. 144	Weston, William, Crichton Hall, Dumfries.
2nd	No. 137	Keay, Mrs, Mountain Hall, Dumfries.
3rd	No. 141	Scott, George, Waterton, Cumnock.
V	No. 133	Brown, James, Oakfield, Catrine.
H	No. 134	Brown, Thomas C., Helenslea, St Ninians.

DAIRY PRODUCE

CLASS 1. POWDERED BUTTER, not less than 3 lb.—PREMIUMS, £4, £2, and £1.

1st	No. 7	Monteith, Mrs Helen, The Island, Bothkennar, Falkirk.
2nd	No. 11	Shanks, Miss, Broomhill, Denny.
3rd	No. 8	Mundell, Miss Margaret M., Dalilongart, Sandbank, Argyll.
H	No. 3	Fleming, Andrew, Threepland, Eaglesham.
C	No. 10	Rennie, Miss, Parkhead, Slamannan.

CLASS 2. FRESH BUTTER, Three 1-lb. Rolls.—PREMIUMS, £4, £2, and £1.

1st	No. 23	Shanks, Miss, Broomhill, Denny.
2nd	No. 22	Rennie, Miss, Parkhead, Slamannan.
3rd	No. 21	Ramage, Mrs James, Lathallan Dairy, Polmont.
V	No. 18	Monteith, Mrs Helen, The Island, Bothkennar, Falkirk.
H	No. 19	Mundell, Miss Margaret M., Dalilongart, Sandbank, Argyll.
C	No. 14	Fleming, Andrew, Threepland, Eaglesham.

CLASS 3. CHEDDAR CHEESE, 56 lb. and upwards.—PREMIUMS, £9, £5, £3, £2, and £1.

1st	No. 30	M'Dowall, George, South Boreland, Dunragit, Wigtownshire.
2nd	No. 36	Plunkett, John Lees, Auchenjibbert, Crocketford, Dumfriesshire.
3rd	No. 31	M'Harg, John, Barbeth, Leswalt, Stranraer.
4th	No. 34	Muir, Andrew, Milton Park, Castle Douglas.
5th	No. 27	Dean, William, Cairniehill, Borgue.
C	No. 28	Gibson, John, Balmesh, Glenluce.

CLASS 4. CHEESE, 14 lb. and under.—PREMIUMS, £5, £3, £2, and £1.

1st	No. 43	Hunter, John P., Garthland Mains, Stranraer.
2nd	No. 40	Cruickshanks, William, Kirkeoch, Kirkcudbright.
3rd	No. 41	Dean, William, Cairniehill, Borgue.
4th	No. 45	M'Harg, John, Barbeth, Leswalt, Stranraer.
H	No. 44	M'Dowall, George, South Boreland, Dunragit.
C	No. 46	Muir, Andrew, Milton Park, Castle Douglas.

WOOL

Cheviot, Border Leicester, and Half-Bred Fleeces must be shown washed, and Blackface and Shetland Fleeces unwashed. All Fleeces must be from sheep bred and reared on, or regular stock of, exhibitor's farm, and, with the exception of Dorset Horn Lamb Wool, must be shorn in the year of the Show.

PURE BREED CLASSES.

CLASS 1. BLACKFACE WOOL—EWE. Three fleeces.—
Premiums, £3, £2, and £1.

1st No. 2 Novar Estates, Limited, Novar, Evanton, Ross-shire.
2nd No. 3 Novar Estates, Limited, Novar, Evanton, Ross-shire.
3rd No. 5 Thompson, William, Elibank, Walkerburn.
H No. 6 Thompson, William, Elibank, Walkerburn.

CLASS 2. BLACKFACE WOOL—HOGG. Three Fleeces.—
Premiums, £3, £2, and £1.

1st No. 10 Novar Estates, Limited, Novar, Evanton, Ross-shire.
2nd No. 9 Novar Estates, Limited, Novar, Evanton, Ross-shire.
3rd No. 12 Thompson, William, Elibank, Walkerburn.
H No. 14 Thompson, William, Elibank, Walkerburn.

CLASS 3. CHEVIOT WOOL—EWE. Three Fleeces.—
Premiums, £3, £2, and £1.

1st No. 18 Thompson, William, Elibank, Walkerburn.
2nd No. 16 Elliot, Thomas R., Attonburn, Kelso.
3rd No. 15 Elliot, Robert T., Chatto, Jedburgh.

CLASS 4. CHEVIOT WOOL—HOGG. Three Fleeces.—
Premiums, £3, £2, and £1.

1st No. 22 Thompson, William, Elibank, Walkerburn.
2nd No. 20 Elliot, Thomas R., Attonburn, Kelso.
3rd No. 21 Gunn, Captain J. W., of Banniskirk, Halkirk, Caithness.

CLASS 5. BORDER LEICESTER WOOL—EWE. Three Fleeces.—
Premiums, £3, £2, and £1.

1st No. 23 Templeton, T. & M., Sandyknowe, Kelso.
2nd No. 24 Templeton, T. & M., Sandyknowe, Kelso.

CLASS 6. BORDER LEICESTER WOOL—HOGG. Three Fleeces.—
PREMIUMS, £3, £2, and £1.

1st No. 25 Templeton, T. & M., Sandyknowe, Kelso.

CLASS 7. HALF-BRED WOOL—EWE. Three Fleeces.—
PREMIUMS, £3, £2, and £1.

1st No. 27 Brown, John C., Hundalee, Jedburgh.
2nd No. 28 Brown, John C., Hundalee, Jedburgh.

CLASS 8. HALF-BRED WOOL—HOGG. Three Fleeces.—
PREMIUMS, £3, £2, and £1.

1st No. 33 Brown, John C., Hundalee, Jedburgh.
2nd No. 32 Brown, John C., Hundalee, Jedburgh.
3rd No. 31 Brown, John C., Hundalee, Jedburgh.

CLASS 9. OXFORD DOWN WOOL—EWE. Three Fleeces.—
PREMIUMS, £3, £2, and £1.

1st No. 36 Malcolm, William M., of Softlaw, Kelso.
2nd No. 35 Clarkson, Alexander, Skirling Mill, Biggar.

CLASS 10. OXFORD DOWN WOOL—HOGG. Three Fleeces.—
PREMIUMS, £3, £2, and £1.

1st No. 39 Malcolm, William M., of Softlaw, Kelso.
2nd No. 40 Templeton, T. & M., Sandyknowe, Kelso.

CLASS 11. SUFFOLK WOOL—EWE. Three Fleeces.—
PREMIUMS, £3, £2, and £1.

1st No. 42 Rintoul, William, Pratis, Leven.
2nd No. 44 Ross-Taylor, J. P., Mungoswalls, Duns.
3rd No. 43 Ross-Taylor, J. P., Mungoswalls, Duns.

CLASS 12. SUFFOLK WOOL—HOGG. Three Fleeces.—
PREMIUMS, £3, £2, and £1.

1st No. 45 Riddell, D., Peaston, Ormiston.
2nd No. 46 Rintoul, William, Pratis, Leven.
3rd No. 47 Ross-Taylor, J. P., Mungoswalls, Duns.

CLASS 13. DORSET HORN WOOL—EWE. Three Fleeces.—
PREMIUMS, £3, £2, and £1.

1st No. 49 Bruce, Lord, Broomhall, Dunfermline.
2nd No. 51 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline.

CLASS 14. DORSET HORN WOOL—LAMB. Three Fleeces.—Premiums, £3, £2, and £1.

(Not awarded.)

Special Prizes *to be awarded for Shetland Wool actually grown in Shetland.* —Premiums, £3, £2, and £1.

1st	No. 60	Brown, A. W., Basta, Mid Yell, Lerwick.
2nd	No. 54	Brown, A. W., Basta, Mid Yell, Lerwick.
3rd	No. 64	Tait, Andrew, Vementry, Bixter, Shetland.
H	No. 53	Anderson, Thomas J., Cairnfield, Lerwick.
C	No. 59	Anderson, Thomas J., Cairnfield, Lerwick.

CLASS 15. SHETLAND WOOL—EWE. Three Fleeces.—Premiums, £3, £2, and £1.

1st	No. 55	Campbell, Mrs M. E., Dolphinton House, Dolphinton.
2nd	No. 56	Campbell, Mrs M. E., Dolphinton House, Dolphinton.
3rd	No. 54	Brown, A. W., Basta, Mid Yell, Lerwick.

CLASS 16. SHETLAND WOOL—HOGG. Three Fleeces.—Premiums, £3, £2, and £1.

1st	No. 62	Campbell, Mrs M. E., Dolphinton House, Dolphinton.
2nd	No. 61	Campbell, Mrs M. E., Dolphinton House, Dolphinton.
3rd	No. 60	Brown, A. W., Basta, Mid Yell, Lerwick.

RURAL INDUSTRIES

OPEN CLASSES.

SHETLAND KNITTING.

(*Exhibits made from Shetland Wool.*)

CLASS 1. FINE LACE GOODS.—PREMIUMS, £3, £2, and £1.

1st	No. 1	Cluness, Mrs E. B., Muness, Uyeasound, Lerwick (Scarf).
2nd	No. 17	Smith, Miss M. J., Phail, Westing, Uyeasound, Shetland (Shawl).
3rd	No. 20	Smith, Miss T., Phail, Westing, Uyeasound, Shetland (Shawl).
V	No. 13	Johnston, Mrs P., Seaview, Baltasound, Lerwick (Shawl).
H	No. 21	Smith, Miss T., Phail, Westing, Uyeasound, Shetland (Scarf).
C	No. 10	Inkster, Mrs J. J., Gardie, Uyeasound, Unst, Shetland (Scarf).
C	No. 19	Smith, Mrs P., Phail, Westing, Uyeasound, Shetland (Shawl).
C	No. 22	Spence, Miss E., Braeside, Baltasound, Shetland (Shawl).

CLASS 2. JUMPER, SPORTS COAT, CARDIGAN, or WAISTCOAT—one or more Colours.—PREMIUMS, £3, £2, and £1.

1st	No. 26	Brown, Miss M. J., Kingland, Ollaberry, Shetland (Jumper).
2nd	No. 41	Jacobson, Miss J., Stoneydale, Bridge of Walls, Shetland (Jumper).
3rd	No. 66	Sinclair, Mrs J. T., Uphouse, Bressay, Lerwick (Jumper).
V	No. 30	Erasmuson, Miss H. A. W., West Shore, Scalloway, Shetland (Jumper).
H	No. 32	Gardner, Miss J., Houll, Fetlar, Shetland (Jumper).

CLASS 3. JUMPER, SPORTS COAT, CARDIGAN, or WAIST COAT—all over Fair Isle.—PREMIUMS, £3, £2, and £1.

1st	No. 100	Spence, Miss A., Houston, Haroldswick, Unst, Shetland (Jumper).
2nd	No. 97	Sinclair, Mrs M., Kettletoft, Sanday, Orkney (Jumper).
3rd	No. 102	Stout, Miss M., Taft, Fair Isle, Lerwick (Jumper).
V	No. 94	Robertson, Miss I., Tansy Knowes, Fetlar, Shetland (Jumper).
H	No. 78	Gardner, Miss J., Houll, Fetlar, Shetland (Jumper).
C	No. 105	Williamson, Miss L., Houll, Mid Yell, Shetland (Pullover).

CLASS 4. OTHER EXHIBITS.—PREMIUMS, £2, £1, and 10s.

1st	No. 124	Johnston, Mrs P., Seaview, Baltasound, Lerwick (Shawl).
2nd	No. 108	Brown, Mrs G., Collafirth, Ollaberry, Shetland (Shawl).
3rd	No. 107	Brown, Mrs G., Collafirth, Ollaberry, Shetland (Shawl).
V	No. 126	Laurenson, Miss G. B., Maywick, Bigton, Lerwick (Scarf).
H	No. 132	Malcolmson, Mrs Magnus, Tronafirth, Tingwall, Lerwick (Men's Stockings).
C	No. 109	Brown, Miss M. J., Kingland, Ollaberry, Shetland (Combinations).

TWEEDS.

CLASS 5. HARRIS or OTHER TWEED—Hand-spun, Hand-woven, and Vegetable-dyed.—PREMIUMS, £3, £2, and £1.

1st	No. 153	Sinclair, Miss M., The Rowans, Lochgilphead.
2nd	No. 144	Macmillan, N. J., 5 Kilvaxter, Kilmuir, Portree.
3rd	No. 142	Best, Miss M., Knotty Ash Weavers, Hampsthwaite, Harrogate.
V	No. 149	Murray, Miss M., Tressidy Hill, Lairg.
H	No. 145	Macphie, P., 13 Hungladder, Kilmuir, Portree.
C	No. 154	Sutherland, Mrs, Claggin, Muie, Rogart.

CLASS 6. TWEED—Mill-spun, Hand-woven.—PREMIUMS, £3, £2, and £1.

1st	No. 171	Ross, Mrs, Pittentrail, Rogart.
2nd	No. 162	Hogg, D., 10 High Street, Earlston.
3rd	No. 167	M'Leod, Mrs, Achillie, Rogart.
V	No. 156	Best, Miss M., Knotty Ash Weavers, Hampsthwaite, Harrogate.
H	No. 161	Hogg, D., 10 High Street, Earlston.
C	No. 166	M'Leod, Mrs, Achillie, Rogart.
C	No. 170	Ross, Mrs, Pittentrail, Rogart.
C	No. 172	Ross, Mrs D. S., Tomich, Lairg.

MISCELLANEOUS.

CLASS 7. HOME-MADE FLOOR RUG (WOOL).—PREMIUMS, £3, £2, and £1.

1st	No. 199	Roger, Miss B. K., Balgove, St Andrews.
2nd	No. 198	Rankin, Mrs M., Mamore Cottage, Fort William.
3rd	No. 186	Fraser-Campbell, Mrs, sen., of Dunmore, Allt-na-Craig, Ardrishaig.
V	No. 192	Macbeth, Miss A., Patterdale, Penrith.
H	No. 197	Porter, Miss C. T., 64 M'Leod Street, Edinburgh.
C	No. 183	Crawford, Mrs, Hatton Mains, Kirknewton.
C	No. 194	Macmillan, N. J., 5 Kilvaxter, Kilmuir, Portree.
C	No. 202	Tayvallich W.R.I., Tayvallich, Lochgilphead.
C	No. 203	Thomson, Miss J., Borthwick Castle, Gorebridge.

CLASS 8. SPECIMEN OF EMBROIDERY—White (to be exhibited unwashed).—PREMIUMS, £3, £2, and £1.

1st	No. 204	Benbradagh and Roe Valley Hand Embroidery Industry, Dungiven, Londonderry (Frock).
2nd	No. 217	Mackay, Miss C., The Towse, Durran, Castletown, Caithness (Nightdress).
3rd	No. 224	Telfer, Miss I., Ottercaps, Kirkwhelpington, Newcastle (Bedspread).
V	No. 207	Coulson, Miss A. L., Leadgates, Whittington (Table Centre).
H	No. 209	Crisp, Mrs, The Gardens, Auchengrange, Lochwinnoch (Nightdress).
C	No. 206	Clarkson, Miss C., Skirling Mill, Biggar (Tray Cloth).
C	No. 214	Jamieson, Mrs Ion C. B., Langshaw, Galashiels (Tea Cloth).
C	No. 218	Mack, Miss A., Cowdenknowes, Earlston (Bedspread).

CLASS 9. SPECIMEN OF COLOURED EMBROIDERY.—Silk or Cotton.—PREMIUMS, £3, £2, and £1.

1st	No. 288	Young, Mrs H., Craigland, Dalbeattie (Picture).
2nd	No. 280	Shields, Mrs J. M., Stoneyhill, Musselburgh (Panel).
3rd	No. 271	Neil, Miss, Kilbreen, Stranraer (Tea Cosy).
V	No. 257	Macbeth, Miss A., Patterdale, Penrith (Coverlet).
H	No. 227	Alexander, Miss E., Balmule, Dunfermline (Supper Cloth).
C	No. 239	Coulson, Mrs H. P., Abbeystone, Strone, Argyll (Cushion).
C	No. 244	Dalguise W.R.I., Craigdonald, Dunkeld (Bedspread).
C	No. 250	Haggart, Mrs J., The Gardens, Balgray, Lockerbie (Fire Screen Panel).
C	No. 259	MacGregor, Miss N., Medwyn House, West Linton (Bag).
C	No. 266	Morgan, Miss A., Wemyss Needlework School, East Wemyss (Handbag).

CLASS 10. SPECIMEN OF COLOURED EMBROIDERY—Woolwork (not cross stitch).—PREMIUMS, £3, £2, and £1.

1st	No. 298	Gourlay, Mrs W. R., Kenbank, Dalry, Kirkcudbrightshire (Stool Top).
2nd	No. 304	Macbeth, Miss A., Patterdale, Penrith (Coverlet).
3rd	No. 294	Clark, Mrs, Scaurbridge Manse, Penpont (Bedspread).
V	No. 289	Adamson, Miss A., Wemyss Needlework School, East Wemyss, Fife (Embroidery for Bag).
H	No. 305	Macbeth, Miss A., Patterdale, Penrith (Coverlet).
C	No. 295	Cochrane, Mrs E. B., Douglas Square, Newcastleton (Table Runner).
C	No. 310	Matheson, Miss M., Glasclune, North Berwick (Cushion).
C	No. 319	Thomson, Mrs D'Arcy, Louvain, Kinross (Door Curtain).
C	No. 321	Thomson, Mrs, 35 Chester Street, Edinburgh (Chair Cover).
C	No. 325	Weir, Mrs H. C., Schoolhouse, Winchburgh (Blotter).

CLASS 11. LEATHER GLOVES.—PREMIUMS, £2, £1, and 10s.

1st	No. 336	Macdonald, Mrs L., South Lodge, Lydgait, Haddington.
2nd	No. 333	Dunchurch Women's Institute Glove Industry, Dunchurch, Rugby.
3rd	No. 332	Dunchurch Women's Institute Glove Industry, Dunchurch, Rugby.
V	No. 330	Dunchurch Women's Institute Glove Industry, Dunchurch, Rugby.
H	No. 331	Dunchurch Women's Institute Glove Industry, Dunchurch, Rugby.
C	No. 340	Scott, Mrs A. S., Middleton Hall, Uphall.

CLASS 12. SPECIMEN OF LEATHER WORK OTHER THAN GLOVES.—PREMIUMS, £2, £1, and 10s.

1st	No. 358	Irving, Mrs M., 1 Market Square, Stoney Stratford (Handbag).
2nd	No. 368	Nodwell, Mrs M. S., Victoria Inn, Dumfries (Handbag).
3rd	No. 348	Davidson, Miss C. R., Shawfield, Dunsyre, Carnwath (Handbag).
V	No. 360	Ledbrook, Miss M. H., 16 Broad Street, Warwick (Handbag).
H	No. 341	Bakewell, Mrs E. L., Rose Villa, The Saltisford, Warwick (Writing Case).
C	No. 361	Ledbrook, Miss M. H., 16 Broad Street, Warwick (Writing Case).
C	No. 362	Ledbrook, Miss M. H., 16 Broad Street, Warwick (Book Cover).

CLASS 13. SPECIMENS OF FURCRAFT.—PREMIUMS, £2, £1, and 10s.

1st No. 377 Dunchurch Women's Institute Glove Industry, Dunchurch, Rugby (Gloves).
2nd No. 376 Dunchurch Women's Institute Glove Industry, Dunchurch, Rugby (Gloves).

CLASS 14. SPECIMEN OF HAND-PAINTED POTTERY.—PREMIUMS, £2, £1, and 10s.

1st No. 386 Blair, Mrs, Hoprig Mains, Macmerry (Pot-pourri Jar).
2nd No. 389 Downey, Miss M. J., The Whins, Kilrenny, Anstruther (Bowl).
3rd No. 385 Blair, Mrs, Hoprig Mains, Macmerry (Loving Cup).
V No. 383 Blair, Mrs, Hoprig Mains, Macmerry (Bowl).
H No. 400 Miller, Mrs J., Yellow House, Broxburn (Vase).
C No. 382 Arthur, Miss G. G., Belmore, Kirn (Fruit Bowl).
C No. 390 Downey, Miss M. J., The Whins, Kilrenny, Anstruther (Bowl).
C No. 404 Wight, Miss B., Hoprig Mains, Macmerry (Jar).

CLASS 15. SPECIMEN OF BASKET-WORK (Raffia not eligible)—PREMIUMS, £2, £1, and 10s.

1st No. 413 Weir, Mrs H. C., Schoolhouse, Winchburgh (Chair).
2nd No. 407 Fyffe, Miss M. E. B., The Manse, Kirkpatrick-Fleming, Lockerbie (Chair).
3rd No. 408 Lillie, Miss A., North Manse, Watten, Caithness (Linen Basket).
V No. 406 Donaldson, Miss, Clovenfords, Galashiels (Book Case).
C No. 411 Nicoll, Mrs J., Liquorstane, Falkland (Shopping Basket).
C No. 414 Weir, Mrs H. C., Schoolhouse, Winchburgh (Basket).

CLASS 16. BEST COLLECTION OF VEGETABLE-DYED WOOLS.—PREMIUMS, £2, £1, and 10s.

1st No. 416 Leitch, Mrs, Cairnbaan, Argyll.
2nd No. 419 Murray, Miss M., Tressidy Hill, Lairg.
3rd No. 421 Russell, Mrs I., Cairnbaan, Argyll.
C No. 418 M'Kechnie, Mrs, Crinan Harbour, Lochgilphead.

CLASS 17. HOME-SPUN YARN—2-3 cuts.—PREMIUMS, £2, £1, and 10s.

1st No. 424 Cluness, Mrs E. B., Muness, Uyeasound, Lerwick.
2nd No. 426 Dundas, Mrs D. J., Woodhouselee, Milton Bridge.
3rd No. 423 Brown, Mrs G., Collafirth, Ollaberry, Shetland.
V No. 429 Sutherland, Mrs D., 10 Chromate Lane, Lerwick.
H No. 428 Smith, Miss M. J., Phail, Westing, Uyeasound, Shetland.

CLASS 18. SPECIMEN OF FILET-LACE.—PREMIUMS, £3, £2, and £1.

1st No. 432 Baillie, Lady, Polkemmet, Whitburn.
2nd No. 458 Warren, Miss R., 41 Murrayfield Gardens, Edinburgh.
3rd No. 445 Leach, Mrs A. M. M., 18 Gayton Road, Harrow.
V No. 442 Donald, Adam, 11 South Elgin Street, Edinburgh.
H No. 441 Donald, Adam, 11 South Elgin Street, Edinburgh.
C No. 440 Darge, Mrs B. W., 68 Merchiston Avenue, Edinburgh.
C No. 443 Gilchrist, Mrs J. L., Craig-uisk, Whitburn.
C No. 449 M'Micking, Miss M., Broomrigg, Dumfries.
C No. 455 Thomson, Miss J. C., 35 Chester Street, Edinburgh.
C No. 456 Thomson, Miss M. S., 35 Chester Street, Edinburgh.

CONFINED CLASSES.

Open to Women's Rural Institutes and Members thereof in the whole of Scotland.

CLASS 19. SPECIMEN OF QUILTING.—PREMIUMS, £3, £2, and £1.

2nd	No. 466	Mackay, Miss C., The Towse, Durran, Castletown, Caithness (Cushion Cover).
3rd	No. 459	Alison, Mrs, D'Arcy, Dalkeith (Cot Quilt).
V	No. 479	Waugh, Miss M. K., Marnhoul, Corsock, Dalbeattie (Nightdress Sachet).
H	No. 460	Elgin, The Countess of, Broomhall, Dunfermline (Cushion).
C	No. 464	Lockhart, Miss A. H. F., Burnside, Linlithgow (Nightdress Sachet).
C	No. 472	Pettigrew, Mrs J. R., Bankton House, Mid-Calder (Bed Quilt).
C	No. 477	Stewart, Mrs F. H., Arndean, Dollar (Handbag).

CLASS 20. STOOL SEATED IN CHAIR-CANING.—PREMIUMS, £3, £2, and £1.

1st	No. 490	Rankin, Mrs M., Mamore Cottage, Fort William.
2nd	No. 482	Beattie, Mrs T. L., Wicketthorn, Kirkpatrick-Fleming, Lockerbie.
3rd	No. 487	Mallen, Miss J., Fordel, Dalkeith.
V	No. 492	Smith, Mrs J., Gardens, Balgray, Lockerbie.

CLASS 21. STOOL TOP WORKED WITH WOOL IN CROSS STITCH (original design).—PREMIUMS, £3, £2, and £1.

2nd	No. 505	Thomson, Miss E. M., Mansefield, Duns.
3rd	No. 502	Orr, Miss J. C. B., Main Street, Carnwath.
V	No. 506	Weir, Mrs H. C., Schoolhouse, Winchburgh.
H	No. 496	Hamilton, Miss J., Brucehaven, Dunfermline.
C	No. 498	Jamieson, Mrs Ion C. B., Langshaw, Galashiels.

CLASS 22. SPECIMEN OF SMOCKING—Child's Garment.—PREMIUMS, £2, £1, and 10s.

1st	No. 518	Macmillan, Miss P., Woodlea, Moniaive (Frock).
2nd	No. 513	Fairlie, Miss, The Farm, Longniddry (Frock).
3rd	No. 520	Sinclair, Mrs M., Kettletoft, Sanday, Orkney (Frock).
V	No. 522	Wight, Miss, Hoprig Mains, Macmerry (Overall).
H	No. 514	Hunter, Mrs, Kilneiss, Moniaive (Frock).
C	No. 512	Erskine, Miss G. M., Claymires Cottage, Newstead, Melrose (Frock).

CLASS 23. SPECIMEN OF PAINTED WOODWORK. —PREMIUMS, £2, £1, and 10s.

1st	No. 530	Macmillan, Miss P., Woodlea, Moniaive (Box).
2nd	No. 526	Hunter, Mrs, Kilneiss, Moniaive (Box).
3rd	No. 527	Jamieson, Mrs Ion C. B., Langshaw, Galashiels (Match-Box Holder).
V	No. 528	Kennedy-Moffat, Miss, Auchencheyne, Moniaive (Box).
C	No. 525	Fairbairn, Mrs M. F., Pharmacy House, Corstorphine (Box).

Confined to Women's Rural Institutes and Members thereof in the South-Eastern Area of Scottish Women's Rural Institutes.

CLASS 24. ARTICLE SHOWING APPLIQUE WORK.—PREMIUMS, £2, £1, and 10s.

1st	No. 540	Muir, Mrs, Millbank Place, Uphall (Bedspread).
2nd	No. 538	Herdman, Mrs N., Southside, Gorebridge (Cloth).
3rd	No. 541	Pettigrew, Mrs J. R., Bankton House, Mid-Calder (Tea Cloth).
H	No. 537	Garft, Miss N., Hopetoun Place, Winchburgh (Table Centre).

CLASS 25. SOFT TOY.—PREMIUMS, £2, £1, and 10s.

1st	No. 549	Moodie, Mrs J. H., Cuil-na-shie, House o' Hill Road, Blackhall (Monkey).
2nd	No. 546	Gibb, Miss Shirra, Wyndhead, Lauder (Dog).
3rd	No. 551	Turner, Miss, Kirklands, Currie (Penguin).
C	No. 545	Galletly, Miss A. E., Drygrange, Melrose (Rabbit).

HORSE-SHOEING AND SHOE-MAKING

Open to Shoeing-Smiths from any part of Great Britain, Northern Ireland, and Irish Free State.

HORSE-SHOEING COMPETITION.

THURSDAY, 25th JUNE, and FRIDAY, 26th JUNE.

Gold Watch, given by Messrs William Martin, Sons, & Co., Coatbridge, *to the winner of First Prize in Class* 1.

Canteen of Cutlery, given by Messrs Neilson & Cleland, Ltd., Coatbridge, *to the winner of Second Prize in Class* 1.

Gold Medal, given by the Mustad Horse Nail Company, *to the winner of Third Prize in Class* 1.

Gold Medal, given by Capewell Horse Nail Company, *to the winner of Fourth Prize in Class* 1.

CLASS 1. FARM HORSES (OPEN CLASS). 1st Prize, £5 and Gold Watch; 2nd Prize, £5 and Canteen of Cutlery; 3rd Prize, £5 and Gold Medal; 4th Prize, £4 and Gold Medal; 5th Prize, £3; 6th Prize, £2; 7th Prize, £2; 8th Prize, £1; 9th Prize, £1.

1st	No. 27	Hamilton, Robert, Twynholm, Kirkcudbrightshire.
2nd	No. 32	Hall, Robert, Muirhead Smithy, Chryston, Glasgow.
3rd	No. 39	M'Donald, Ian, Castlehill Smithy, Kintore.
4th	No. 37	Hamilton, John J., Twynholm, Kirkcudbrightshire.
5th	No. 59	Crichton, George G., 40 Livery Street, Bathgate.
6th	No. 16	Paul, Thomas, Barrie Street, Motherwell.
7th	No. 1	Chalmers, Alexander, 388 Paisley Road, Glasgow, C.5.
8th	No. 31	Stephen, William, Balmellie Street, Turriff.
9th	No. 30	Young, James, c/o T. Begg, East Kilbride.

Silver Tea Service, given by the Scottish Iron and Steel Co., Ltd., Glasgow, *to the winner of First Prize in Class* 2.

Canteen of Cutlery, given by Messrs Neilson & Cleland, Ltd., Coatbridge, *to the winner of Second Prize in Class* 2.

Gold Medal, given by the Mustad Horse Nail Company, *to the winner of Third Prize in Class* 2.

CLASS 2. FARM HORSES (Juniors under twenty-five years of age).—1st Prize, £5 and Silver Tea Service; 2nd Prize, £3 and Canteen of Cutlery; 3rd Prize, £2 and Gold Medal; 4th Prize, £1.

1st	No. 78	Mudie, R., Clatterha Smithy, Forfar.
2nd	No. 81	Borthwick, James, Mossend Smithy, Gorebridge.
3rd	No. 83	Story, John, Stichill, Kelso.
4th	No. 87	Brodie, William, 106 Broadholm Street, Possilpark, Glasgow.

Silver Cup, value £5, and Gold Medal, given by National Master Farriers' and Blacksmiths' Association, *to be awarded to the competitor obtaining the highest number of points in either Classes* 1 *or* 2.

Hamilton, Robert, Twynholm, Kirkcudbrightshire (80 points).

SHOE-MAKING COMPETITION.

WEDNESDAY, 24th JUNE.

1st Prize, £5 and Silver Cup; 2nd Prize, £5; 3rd Prize, £3; 4th Prize, £2; 5th Prize, £1.

1st	No. 53	Hamilton, Robert, Twynholm, Kirkcudbrightshire.
2nd	No. 65	Stephen, Ralph, 76 New Wynd, Montrose.
3rd	No. 29	Duncan, James, Newburgh, Aberdeen.
4th	No. 56	Mackie, William C., Glasgoforest, Kinellar.
5th	No. 2	Crichton, George G., 40 Livery Street, Bathgate.

LIVE STOCK JUDGING COMPETITION

Open to all persons not exceeding 23 years of age at the date of the Competition.

'Glasgow Herald' Challenge Cup, value £50, *to be awarded each year to the winning team in the Inter-College Contests.* Given by Messrs George Outram & Co., Ltd., Glasgow.

West of Scotland Agricultural College (Team A), 156 points.

Gold Medal *to be awarded to the highest individual scorer, irrespective of whether the winner is or is not a College Entrant.* Given by Messrs George Outram & Co., Ltd., Glasgow.

Park, Miss Jean, Brunstane, Portobello	equal, 38 points.
Allan, Thomas, Woodend, Duns	

INDIVIDUAL COMPETITION.

PREMIUMS, £5, £4, £3, £2, and £1.

1st	equal	Park, Miss Jean, Brunstane, Portobello	38 points
2nd		Allan, Thomas, Woodend, Duns	38 ,,
3rd	equal	Corkill, Miss Florence E., West of Scotland Agricultural College, Auchincruive	36 ,,
4th		M'Laren, James R., Fintalich, Muthill	36 ,,
5th		Milne, Robert, Affloch, Dunecht	36 ,,
6th		Sommerville, James A., Smeaton, Dalkeith	36 ,,

TEAM COMPETITION.

1st Prize, £10 and 5 Medium Silver Medals.

WEST OF SCOTLAND AGRICULTURAL COLLEGE (TEAM A).

Kilpatrick, William J., Craigie Mains, Kilmarnock	34 points
Stevenson, R. H. U., Balig, Ballantrae	34 ,,
Clanachan, Andrew, West of Scotland Agricultural College, Auchincruive	32 ,,
M'Fadzean, Hugh, Oakbank, Maybole	30 ,,
Boag, John, West of Scotland Agricultural College, Auchincruive	26 ,,
	156 ,,

2nd Prize, £5 and 5 Medium Bronze Medals.

WEST PERTHSHIRE YOUNG FARMERS' CLUB (TEAM B).

M'Laren, James R., Fintalich, Muthill	36	points
Allan, George, jun., Craggish Farm, Comrie	34	,,
Fotheringham, W. G., Westerton, Blackford	28	,,
MacIntosh, Archie, Strageath Hall, Muthill	28	,,
Reid, John, East Lundie, Doune	22	,,
	148	,,

Special Prize for College Team placed highest in Competition, £5.

West of Scotland Agricultural College (Team A), 156 points.

BUTTERMAKING COMPETITIONS

CHAMPIONSHIP CLASS.

PRINCE OF WALES CHAMPION GOLD MEDAL.

No. 67 Jones, Miss Sybil E., Cwm Crickhowell, Breconshire.

PRINCE OF WALES CHAMPION SILVER MEDAL.

No. 37 Prentice, Miss Jenny W., Craigrie, Clackmannan.

NOVICE CLASS—FIRST SECTION.

PREMIUMS, £3, £2, and £1.

1st No. 6 Meiklem, Mrs C. A., Muttonhall, Kirkcaldy.
2nd No. 7 Nimmo, Miss Jenny, 5 Park Terrace, Lugar, Ayrshire.
3rd No. 8 Baxter, Miss Isa M. R., Dolphinstone, Tranent.
V No. 1 Walker, Miss Mary, Pulmullen, Straiton, Ayrshire.
H equal { No. 2 Murdoch, Miss Lizzie, Laighpark, Coylton, Ayrshire.
No. 3 Lennox, Miss Etta, Frogmore, 32 Fothringham Road, Ayr.
C No. 5 Bell, Miss Robina D. O., County Cottages, Chapel, Kirkcaldy.

NOVICE CLASS—SECOND SECTION.

PREMIUMS, £3, £2, and £1.

1st No. 20 Wyllie, Miss J. F., Bowhouse, Kinglassie.
2nd No. 16 Baxter, Miss Margaret M., Templehall, Ormiston.
3rd No. 12 Kinnaird, Miss Nan, Dogton, Kinglassie.
V No. 14 Robertson, John, Monkwood Mains, by Maybole.
H No. 19 Walker, Miss Nancy, Threethorns, Kirkmichael.
C No. 17 M'Kechan, Miss Mary K., Balhaldie, Greenloanan, Perthshire.

OPEN CLASS—FIRST SECTION.

PREMIUMS, £5, £3, £2, and £1.

1st No. 26 Drake, Miss Margaret M., Middlerig, Bathgate.
2nd No. 27 Renton, Miss J. W. N., Furbar, Armadale, West Lothian.
3rd No. 29 Ritchie, Miss Isabel T., Bishopry, Bathgate.
4th equal { No. 21 Dow, Miss Winifred, 13 Stephen Avenue, Dufftown.
No. 33 Walker, Miss Daisy C., Eastoun Farm, Bathgate.
V No. 28 Rennie, Miss Catherine W., Baads Mains, West Calder.
H No. 23 Orr, Miss Mary S., Torrance Farm, Blackridge, West Lothian.

OPEN CLASS—SECOND SECTION.

Premiums, £5, £3, £2, and £1.

1st	No. 43	Cuthbertson, Miss Eleanor, The Crossways, Rowlands Gill, Durham.
2nd	No. 44	Hird, Miss Molly, Little Broughton, Cockermouth.
3rd	No. 37	Prentice, Miss Jenny W., Craigrie, Clackmannan.
4th	No. 38	Potter, Miss Margaret, Crossgreen Farm, Uphall.
V	No. 45	Macdonald, Miss Mary, 27 Marketgate, Crail.
H equal	No. 34	Ness, Miss Catherine D., Cashmill, Auchtermuchty.
	No. 46	Sutherland, Miss Janet N., Woodmouth, Madderty, Crieff.

OPEN CLASS—THIRD SECTION.

Premiums, £5, £3, £2, and £1.

1st	No. 59	Corkill, Miss Florence E., Ballamenagh Farm, Baldrine, Isle of Man.
2nd	No. 55	Boag, John, 41 Claremont Road, Leith.
3rd	No. 53	Scott, Miss Margaret, Ardcastle, Lochgair, Lochfyne.
4th	No. 52	Campbell, Miss Ena L., The Craigs, Clachan, Kintyre.
V	No. 57	Mitchell, Miss Kate, Bleaton, Blairgowrie.
H	No. 58	Cullen, Miss Mary M., Mollandhu, Cardross.

OPEN CLASS—FOURTH SECTION.

Premiums, £5, £3, £2, and £1.

1st	No. 67	Jones, Miss Sybil E., Cwm Crickhowell, Breconshire.
2nd	No. 66	Reed, Miss Dorothy E. H., Broadwood, Frosterley, Co. Durham.
3rd	No. 61	Scott, Miss Mary A., 38 Carden Place, Aberdeen.
4th	No. 71	Adam, Miss Mary M., Burmieston, Methven.
V	No. 64	Drummond, Miss Maggie, Strathmore Farm, by Lochgilphead.
H	No. 68	Park, Tom, Comely Bank, Strathaven.

OPEN CLASS—FIFTH SECTION.

Premiums, £5, £3, £2, and £1.

1st	No. 77	Hunter, John Fraser, 3 Burnbank, Stoneykirk Road, Stranraer.
2nd	No. 49	Stalker, Miss Mary, Ratten Castle, Southwaite, Carlisle.
3rd	No. 83	Turnbull, Miss Mattie, Springfield, Yarrow.
4th	No. 76	Morrison, Miss Evelyn M., Mill of Wardes, Insch.
V	No. 86	Fulton, Miss Lily M., Boydston, Hurlford.
H	No. 84	Smith, Miss Eva S., Wyllieland, Fenwick.

NOVICE CLASS—THIRD SECTION.

PREMIUMS, £3, £2, and £1.

1st	No. 96	Sutherland, Miss Janet N., Woodmouth, Madderty, Crieff.
2nd	No. 99	Drake, Miss Catherine, Middlerig, Bathgate.
3rd	No. 98	Orr, Miss Mary S., Torrance Farm, Blackridge, West Lothian.
V	No. 102	Cullen, Miss Mary M., Mollandhu, Cardross.
H	No. 101	MacGregor, Miss Margaret H., Peterhead Farm, Gleneagles.
C	No. 97	Walker, Miss Martha D., Balgornie Farm, Whitburn, West Lothian.
C	No. 110	Kyle, Miss Mary M'Clymont, Keir Home Farm, Dunblane.

NOVICE CLASS—FOURTH SECTION.

PREMIUMS, £3, £2, and £1.

1st	No. 120	Murdoch, Miss Mary, Over Benchil Farm, Stanley.
2nd	No. 109	Mitchell, Miss Janet H., Castletoun, Fordoun.
3rd	No. 107	Mitchell, Miss Kate, Bleaton, Blairgowrie.
V	No. 104	Inman, Miss Enid S., Milton Moor, Preston Richard, Milnthorpe.
H equal	No. 118	Young, Miss Janet D., Knock Farm, Bathgate.
	No. 124	Smith, Miss Connie, Ushaw College, Durham.
C equal	No. 105	Murray, Miss M. A., Faugh Beeches, Heads Nook, Cumberland.
	No. 123	Wrathall, Miss J., High Barn, Milnthorpe, Westmorland.

HORTICULTURAL SECTION.

CLASS A.—COLLECTION OF FLOWERS, PLANTS, SHRUBS, OR VEGETABLES.

PRINCE OF WALES GOLD MEDAL and £10.

No. 2 Dobbie & Co., Limited, Seed Growers and Nurserymen, Edinburgh.

PRINCE OF WALES SILVER MEDALS.

No. 4 T. Smith, Daisy Hill Nursery, Newry.
No. 6 Oliver & Hunter, Moniaive, Dumfriesshire.
No. 9 Laird & Dickson, Pinkhill Nurseries, Corstorphine, Edinburgh.
No. 10 Allwood Brothers, Wivelsfield Nurseries, Haywards Heath, Sussex.
No. 12 Maxwell & Beale, The Dorset Nursery, Broadstone, Dorset.
No. 13 Dicksons & Co., 20 Charlotte Square, Edinburgh.

Highly Commended.

No. 7 John Forbes (Hawick), Limited, Buccleuch Nurseries, Hawick.

Commended.

No. 3 Kent Brydon & Haigh, Tees Bank Nurseries, Darlington.
No. 5 Austin & M'Aslan, 91-95 Mitchell Street, Glasgow, C. 1.
No. 8 Thomas Robinson, Porchester Nurseries, Nottingham.
No. 15 Tillie, Whyte & Benvie, 12 Melbourne Place, Edinburgh.
No. 19 Little & Ballantyne, Limited, Carlisle.

CLASS B.—FORMAL GARDENS OR ROCK GARDENS.

PRINCE OF WALES GOLD MEDAL and £10.

No. 17 Edrom Nurseries, Edrom, Berwickshire.

Highly Commended.

No. 18 Young & Thomson, Braids Nursery, Braid Avenue, Edinburgh.

Commended.

No. 14 Peter Aitken, Ballencrieff Nursery, Bathgate.

NEW IMPLEMENTS

The Judges, having inspected the new implements submitted for competition, have awarded the Society's Silver Medal to the following :—

Hall, Joseph, Scar Foot Farm, Orton, Penrith—Improved Feeding Appliances for Cattle and Sheep (Nos. 1839, 1840, 1841, and 1842).

Small, Peter, 15 Queen Street, Forfar—Ridging and Cultivating Attachment for Tractors (No. 324).

JUDGES.

Clydesdale Stallions and Colts—Peter Dewar, Arnprior, Port of Menteith.

Clydesdale Geldings—Leslie Durno, Kirkhill, Oldmeldrum.

Clydesdale Mares and Fillies—John M'K. M'Farlane, West Mains, Gleneagles.

Shires—John Wilson, Yett, Libberton, Carnwath.

Suffolk Horses—A. Carlyle Smith, Sutton Hall, Woodbridge, Suffolk.

Hunter Brood Mares and Young Stock — Lieut.-Colonel John M'Kie, Glencaird, Bargrennan, Newton Stewart.

Hunter Saddle Classes—Captain T. L. Wickham-Boynton, Burton Agnes Hall, Driffield.

Highland and Western Island Ponies —Major William Logan, O.B.E., Doonbank, Inverness.

Shetland Ponies—The Hon. Nancy Arbuthnott, Cairnhill, Forfar.

Riding Ponies—Lieut.-Colonel John M'Kie, Glencaird, Bargrennan, Newton Stewart.

Harness Classes — Major William Logan, O.B.E., Doonbank, Inverness.

Draught Geldings in Harness—Leslie Durno, Kirkhill, Oldmeldrum.

Poultry—William W. Broomhead, Hood House, 71 Fleet Street, London, E.C.4—Classes 1 to 22, 35 to 52; R. S. Marsden, Bridge House, Chatburn, Clitheroe, Lancs.—Classes 23 to 34, 77 to 96; Ralph Alty, Mill House, Croston, Preston, Lancs.—Classes 53 to 72, 110 to 125; W. Powell-Owen, 47A High Street, Hampstead, London, N.W.3—Classes 73 to 76, 97 to 109, 126 to 130.

Eggs—Alexander F. Smith, Ardmohr, East Calder.

Fur-Producing Rabbits—T. Beresford, 192 Whitegate Drive, Blackpool.

Honey, &c.—James H. Langlands, 31 Murraygate, Dundee.

Dairy Produce—Robert G. Gilchrist, 5 Shuttle Street, Glasgow.

Wool—William Fergusson, Scottish Wool Growers, Ltd., Garscube Road, Glasgow.

Rural Industries—Miss Bruce, 111A George Street, Edinburgh—Classes 1, 2, 3, 4, 5, 6, 7, 16, 17; Miss Chart, The Edinburgh College of Art, Lauriston Place, Edinburgh; Miss A. Morton, 29 Polwarth Gardens, Edinburgh; Miss Penelope Beaton, 108 George Street, Edinburgh—Classes 8, 9, 10, 11, 12, 14, 18, 19, 21, 22, 24; Mrs M. S. Hunter, The Wheat Sheaf, Daventry—Class 13; Mrs MacIvor Brewin, Rose Cottage, East Trinity Road, Edinburgh—Classes 15, 20, 23; Mrs M. M. Parsons, Achnaba, Lochgilphead—Class 25.

Horse Shoeing—Professor A. Gofton, F.R.C.V.S., City of Edinburgh Veterinary Department, Johnston Terrace, Edinburgh; William French, Inveresk; Edward Martin, sen., Closeburn, Dumfries.

Horticulture—R. L. Harrow, Royal Botanic Garden, Edinburgh; John T. Jeffrey, Public Parks Department, 17 Graham Street, Edinburgh.

Buttermaking — William Burkitt, B.Sc., Grange Hill, Bishop Auckland; A. A. M. Fisher, St Cuthbert's Co-operative Association, Ltd., 92 Fountainbridge, Edinburgh; James Kirkwood, N.D.A., The Dairy School, Kilmarnock; William Lennox, of Messrs A. M'Lelland & Sons, Ltd., Kilmarnock.

New Implements.—J. P. Ross-Taylor, Mungoswalls, Duns; P. O. Turnbull, Bowmont, Dunbar; George Will, Acrehead, Dumfries.

STEWARDS.

Cattle.—James Durno, Crichie, Inverurie.

Horses.—Alexander Murdoch, East Hallside, Hallside, Lanarkshire.

Sheep, Goats, Pigs and Wool.—Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.

Poultry and Rabbits.—James R. Lumsden of Arden, Dumbartonshire.

Forage.—John W. Prentice, Craigrie Farm, Clackmannan.

Implements.—J. P. Ross-Taylor, Mungoswalls, Duns.

Horticulture.—The Lord Scone, Scone Palace, Perth.

Grand Stands.—Major Robert W. Sharpe of The Park, Earlston.

Gates.—Ian M. Campbell, Balblair, Invershin.

Catering, Bees, Honey, &c.—Dr T. G. Nasmyth, Canaan Lodge, Canaan Lane, Edinburgh.

ASSISTANT STEWARDS.

Cattle.—Alexander Munro of Leanach, Culloden Moor, Inverness.

Horses.—George Grant, Glenfarclas, Blacksboat; H. M. Leadbetter, Knowesouth, Jedburgh.

Sheep, Goats, Pigs and Wool.—N. H. Constable, Bute Estate Office, Rothesay.

Forage.—T. Mercer Sharp, Bardrill, Blackfoot.

Implements.—Charley Tinker, Kilmartin, Inverness.

Grand Stands.—Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.

Gates.—James P. Brown, Dipple, Fochabers.

ATTENDING MEMBERS.

CLYDESDALE STALLIONS AND COLTS.—*John P. Sleigh, John Speir,* David Allison, Jun., R. M'C. Broadfoot, John Kerr.

CLYDESDALE GELDINGS.—*T. Mercer Sharp,* William C. Chapman, Andrew Renwick.

CLYDESDALE MARES AND FILLIES.—*A. A. Hagart Speirs, Robert Miller,* James S. Fullarton, John Robertson.

CLYDESDALE FOALS.—*A. A. Hagart Speirs, Robert Miller,* James S. Fullarton, John Robertson.

SHIRES.—*William Meiklem,* William Crawford, James Mather.

SUFFOLKS.—*William Meiklem,* William Crawford, James Mather.

HUNTERS.—*Major Robert W. Sharpe, John M. Allison, Major W. A. Baird,* George W. Blackwood, John Cadzow, Allan Usher Cunningham.

HIGHLAND AND WESTERN ISLAND PONIES.—*Hon. T. G. P. Corbett, Thomas Elliot,* William Bruce, M.A., B.Sc., Alick D. Buchanan Smith.

SHETLAND PONIES.—*James Kilpatrick, David S. Hutcheson,* Miss Mary I. Bonar, Bailie George F. B. Simpson.

RIDING PONIES.—*Major Robert W. Sharpe, John M. Allison, Major W. A. Baird,* George W. Blackwood, John Cadzow, Allan Usher Cunningham.

HORSES IN HARNESS.—*James Kilpatrick, David S. Hutcheson,* George Dun, William M. Wilson.

DRAUGHT GELDINGS IN HARNESS.—*T. Mercer Sharp,* Andrew Renwick.

POULTRY.—*Dr J. F. Tocher, Alexander Forbes, Major Mark Sprot,* John Milne Henderson, Matthew Mather, John Nimmo.

EGGS.—*John Robson, Jun.,* Wilfrid E. Smith, N.D.D., Bailie George S. Gardner, Bailie James Gorman.

FUR-PRODUCING RABBITS.—Alexander Neil Dudgeon, James Lawrie, Alan Miller Richard.

HONEY, &c.—*Bailie William Poole,* Alexander M'Callum, M.A., LL.B., Bailie Peter Given.

DAIRY PRODUCE.—*John Robson, Jun.,* Wilfrid E. Smith, N.D.D., Bailie George S. Gardner, Bailie James Gorman.

WOOL.—*Convener William Duncan,* Mark C. Morrison, Robin Welsh.

RURAL INDUSTRIES.—*Dr R. Stewart Macdougall, C. H. Scott Plummer,* Archibald Cochrane, Miss Jessie Y. Park, Mrs Shields.

HORSE-SHOEING AND SHOE-MAKING.—*John M. Allison, Charles H. Beveridge, John E. B. Cowper,* Thomas Blair, James Letham, William Weston.

HORTICULTURAL SECTION.—Charles Buchanan, Professor Ernest Shearer, Mark Slight.

BUTTERMAKING.—Miss J. Macdonald, Wilfrid E. Smith, N.D.D.

VETERINARY DEPARTMENT.

CLASS EXAMINATIONS, 1931.

Silver Medals were awarded to the following :—

GLASGOW VETERINARY COLLEGE.

Junior Anatomy	James G. Murray, Glasgow.
Chemistry	John M'Lintock, Kilmacolm.
Biology	John M'Lintock, Kilmacolm.
Senior Anatomy	Alexander S. Chapman, Paisley.
Physiology	James C. Brown, Campbeltown.
Zootechny	John W. Macaulay, Glasgow.
Materia Medica	James A. Brown, Biggar.
Pathology	Samuel Jamieson, Glasgow.
Hygiene	Mary L. Somervail, Glasgow.
Surgery	William A. Milligan, Annan.
Medicine	William A. Milligan, Annan.

11 Large Silver Medals, £10, 3s. 6d.

ROYAL (DICK) VETERINARY COLLEGE.

Junior Anatomy	A. Robertson, Stonehaven.
Chemistry	J. A. M'Kinnon, Lochmaben.
Biology	A. Robertson, Stonehaven.
Senior Anatomy	J. M'P. Fraser, Auldearn.
Physiology	J. M'P. Fraser, Auldearn.
Zootechny	J. Graham, Annan.
Materia Medica	W. B. Forrest, Kirkcaldy.
Pathology	W. B. Forrest, Kirkcaldy.
Hygiene	J. P. Pickering, Hexham.
Surgery	J. Johnston, Brechin.
Medicine	J. Johnston, Brechin.

11 Large Silver Medals, £10, 3s. 6d.

DISTRICT COMPETITIONS, 1931.

15 Districts	7 Grants of £12 each ; 1 of £11, 15s. ; 1 of £11 ; 1 of £10, 12s. ; 1 of £7, 10s. ; 2 of £6 ; 1 of £3 ; and 1 of £2	£141	17	0
13 ,,	Grants of £15 each	195	0	0
22 ,,	Special Grants : Medals, £13, 4s. 6d.	144	12	3
	Medals for Shows (39 large)	36	1	6
	Premium and Medals for Cottages, Gardens, &c.	5	0	0
45 ,,	Medals for Hoeing Competitions, 1930-31	17	8	9
199 ,,	Medals for Ploughing, 1930-31	99	10	0
Long Service Certificates, £30, 17s. 6d. ; Gold Medals, £52, 5s. ; and Silver Medals, £31, 10s. (1930-31)		114	12	6
		£754	2	0

ABSTRACT OF PREMIUMS.

District Competitions	£639	9	6
Long Service Awards	114	12	6
Veterinary Colleges (22 Medals)	20	7	0
	£774	9	0

DUMFRIES SHOW, 1930.

ALTERATIONS IN PRIZE LIST.

On account of animals failing to comply with the Regulations as to calving, foaling and farrowing, the following changes have taken place in the list of animals for which prizes were awarded:—

CATTLE.

SHORTHORN.

CLASS 8. COW or HEIFER, born on or after 1st December 1927, and before 1st December 1928.—PREMIUMS, £10, £5, £3, and £2.

1st No. 38 Piper, James, of The Grange, Burntisland, Heifer, "Letham Violet 3rd" (111,853).
2nd No. 35 Cameron, James, Balnakyle, Munlochy, Heifer, "Balnakyle Augusta 26th" (105,771).
3rd No. 36 Crawford and Balcarres, The Earl of, K.T., Balcarres House, Colinsburgh, Heifer, "Balcarres Joan" (106,479).
* No. 37 Harris, Joseph, Brackenburgh Tower, Carlisle, Heifer, "Oxford Duchess of Calthwaite 133rd" (108,334).

ABERDEEN-ANGUS.

CLASS 17. COW or HEIFER, born on or after 1st December 1927, and before 1st December 1928.—PREMIUMS, £10, £5, £3, and £2.

1st No. 89 Beddie, James, Banks, Strichen, Heifer, "Gammer Ebena" (86,035).
* No. 92 Grant, Sir George Macpherson, Bart., Ballindalloch Home Farms, Ballindalloch, Heifer, "Elaine of Ballindalloch" (86,981).
* No. 90 Beddie, James, Banks, Strichen, Heifer, "Becharming Maid of Banks" (86,026).
* No. 95 Murray, Thomas, & Sons, Laigh Grange Farm, Maybole, Heifer, "Echisina of Laigh Grange" (87,909).
* No. 94 Kerr, J. E., of Harviestoun, Dollar, Heifer, "Evelex of Harviestoun" (87,329).
* No. 93 Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, Heifer, "Elinka of Doonholm" (87,315).
2nd No. 88 Allendale, Viscount, Bywell Home Farm, Stocksfield-on-Tyne, Heifer, "Matuba of Bywell" (85,932).
3rd No. 96 Ross-Taylor, J. P., Mungoswalls, Duns, Heifer, "Mungos Pride of the Farm" (88,313).

GALLOWAY.

CLASS 25. COW or HEIFER, born on or after 1st December 1927, and before 1st December 1928.—PREMIUMS, £10, £5, £3, and £2.

* No. 157 Buchanan-Jardine, Sir John William, of Castlemilk, Bart., Castlemilk, Lockerbie, Heifer, "Lilith 4th of Castlemilk" (32,237).
1st No. 173 Shepley-Shepley, Robert, of Troquhain, Balmaclellan, Kirkcudbrightshire, Heifer, "Lady Rose 5th of Scroggie Hall" (32,507).

The animals failing to qualify are marked thus (*).

2nd No. 155 Buccleuch and Queensberry, The Duke of, K.T., Drumlanrig Castle, Thornhill, Dumfriesshire, Heifer, "Angelica of Drumlanrig" (31,974).
3rd No. 164 Gourlay, Francis N. M., Kirkland, Tynron, Thornhill, Dumfriesshire, Heifer, "Rose Leaf 5th of Craigneston" (32,153).
* No. 159 Carruthers, Lieut-Colonel F. J., of Dormont, Lockerbie, Heifer, "Rachel of Holmendis" (32,003).
4th No. 163 Gillett, Arnold, of Crawfordton, Moniaive, Heifer, "Daisy 2nd of Scroggie Hall" (32,510).

BELTED GALLOWAY.

Class 30. HEIFER, born on or after 1st December 1927, and before 1st December 1928.—Premiums, £10, £5, £3, and £2.

1st No. 222 Cayzer, Sir August, Bart., Gartmore, Stirling, "Gartmore Duchess VII." (1614 B).
2nd No. 223 Cross, Sir William, of Scatwell, Bart., Muir of Ord, Ross-shire, "Scatwell Lady Luck" (1656 B).
3rd No. 220 Brown, J. Douglas, Corseyard, Kirkcudbright, "Knockbrex Fleur-de-Lys" (1596 B (D)).
* No. 226 Irving, Robert Chrystal, Shenley Lodge, Ridge Hill, Barnet, Herts., "Shenley Black Ivory" (1688 B).
4th No. 228 Tetley, W. S., Drury Lane Farm, Redmarley, Gloucester, "Redmarley Pine" (1404 B).

HIGHLAND.

Class 36. COW or HEIFER, born in 1927.—Premiums, £10, £5, £3, and £2.

* No. 256 Southesk, The Earl of, Kinnaird Castle, Brechin, Heifer, "Maura of Southesk."
* No. 252 Dunlop, Miss, of Shieldhill, Biggar, Heifer, "Princess Geralda VI." (10,182).
* No. 257 Southesk, The Earl of, Kinnaird Castle, Brechin, Heifer, "Caroline III. of Southesk."
* No. 255 Maitland, Brig.-General J. D. Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, Heifer, "Fuinary Princess II. of Errol" (10,126).
* No. 254 M'Douall, A. K., of Logan, Stranraer, Heifer, "Countess Finella of Logan."
1st No. 253 M'Douall, A. K., of Logan, Stranraer, Heifer, "Princess Alma of Logan."

AYRSHIRE.

Class 43. HEIFER, born in 1928.—Premiums, £10, £5, and £3.

1st No. 305 Barr, Thomas, Hobsland, Monkton, "Hobsland Missie 6th" (16,590).
2nd No. 309 Dalziel, Robert, Rue, Auldgirth, "Rue Rhoda" (20,620).
* No. 307 Cochrane, Lieut.-Colonel Lord, of Cults, Crawford Priory, Springfield, Fife, "Cults Minx" (21,471).
3rd No. 308 Dalziel, Robert, Rue, Auldgirth, "Rue Nanette" (20,617).

RED POLL.

Class 58. HEIFER, born in 1928.—Premiums, £10, £5, and £3.

* No. 409 Cranworth, Lord, Grundisburgh, Suffolk, "Grundisburgh Lucky Duck" (41,432).
1st No. 413 Robertson, W. B., Colton, Dunfermline, "Colton Fionna" (41,154).
* No. 412 Montrose, The Duchess of, Home Farm, Brodick, Arran, "Isle of Arran Jaborandi" (41,584).

The animals failing to qualify are marked thus (*).

HORSES.

DRAUGHT MARES.

CLASS 71. YELD MARE, born before 1927.—PREMIUMS, £15, £9, £6, and £4.

* No. 520 Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Alanna."
1st No. 517 Dalziel, Robert, Rue, Auldgirth, "Rue May Queen."
2nd No. 525 Sleigh, John P., of St John's Wells, Fyvie, "Wells Lorna" (57,325).
3rd No. 522 MacLaren, A. & T., Drummore, Doune, "Lady Steel."
* No. 518 Gray, A. & A., Ingleston of Borgue, Kirkcudbright, "Bantaskin Rose" (57,456).
* No. 521 M'Connell, James, Boreland, Whauphill, "Miss Record" (55,407).
4th No. 524 Miller, William S., Jun., Balmanno Castle, Bridge of Earn, "Balmanno Elsie."

SHIRE.

CLASS 76. YELD MARE or FILLY, born before 1929.—
PREMIUMS, £15, £9, £6, and £4.

* No. 574 Greenwell, Sir Bernard, Bart., Marden Park, Woldingham, Surrey, Mare, "Marden Unity" (122,208).
1st No. 572 Foster, G. R. C., Anstey Hall, Trumpington, Cambridge, Mare, "March Coming Queen" (112,233).
2nd No. 576 Loyd, A. Thomas, Lockinge House, Wantage, Mare, "Nameless" (118,657).
3rd No. 573 Foster, G. R. C., Anstey Hall, Trumpington, Cambridge, Mare, "Bower Beatrice."
* No. 571 Dyer, Thomas & Evans & John, Limited, Ferryside Chambers, Swansea, Mare, "Foscote Disdain" (114,252).

PIGS.

LARGE BLACK.

CLASS 164. SOW, born in 1929.—PREMIUMS, £8, £4, and £2.

1st No. 1269 Woolland, Walter, Baydon Manor, Ramsbury, Marlborough, "Syde Rosamond 1st" (F 78).
2nd No. 1267 M'Caig & Goodchild, Foreside of Cairn, Forfar, "Yam Eliza 21st" (F 1370).
* No. 1266 M'Caig & Goodchild, Foreside of Cairn, Forfar, "Yam Enid 5th" (F 1366).

The animals failing to qualify are marked thus (*).

NEW IMPLEMENTS.

The Judges, having inspected the new implements submitted for competition, have awarded the Society's Silver Medal to the following:—

J. Bisset & Sons, Ltd., Greenbank Works, Blairgowrie (No. 1194).—"Blairgowrie" Manure Sower.

STATE OF THE FUNDS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

As at 30th NOVEMBER 1931

I. BRITISH GOVERNMENT SECURITIES—						
£19,300 5 per cent War Stock, 1929-47, at 95⅜				£18,407	7	6
£1,679, 13s. 4d. 2½ per cent Consolidated Stock, at 52¾				886	0	5
£8,000 4½ per cent Conversion Stock, at 92¾				7,420	0	0
£6,200 3 per cent Local Loans, at 60½				3,751	0	0
£4,000 3½ per cent Conversion Stock, at 71½				2,860	0	0
				£33,324	7	11
II. HERITABLE BONDS—						
£15,660 at Commissioner's Rates				15,660	0	0
III. RAILWAY DEBENTURE AND PREFERENCE STOCKS—						
£17,050 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 49½	£8,439	15	0			
£11,554 Do. do. 4 per cent do., at 67	7,741	3	7			
£16,105 London Midland and Scottish Railway Co. 4 per cent Debenture Stock, at 69½	11,192	19	6			
£1,500 Do. do. 4 per cent Preference Stock, at 43	645	0	0			
£703 Southern Railway Co. 4 per cent Debenture Stock, at 70	492	2	0			
£450 Do. do. 5 per cent Preference Stock, at 63	283	10	0			
£112 Do. do. 5 per cent Guaranteed Stock, at 89	99	13	7			
				28,894	3	8
IV. BANK STOCKS—						
£5,150 0 0 Royal Bank of Scotland, at 326⅝	£16,821	3	9			
£2,218 16 5 Bank of England, at 247	5,480	10	0			
£1,110 13 4 Bank of Scotland, at 349	3,876	4	0			
2,850 "B" Shares, Barclays Bank, at 45s.	6,412	10	0			
				32,590	7	9
V. COLONIAL GOVERNMENT STOCKS—						
£2,500 Dominion of Canada Registered 3½ per cent Stock (1930-50), at 81	£2,025	0	0			
£2,500 New South Wales Inscribed 5 per cent Stock (1935-55), at 69	1,725	0	0			
£2,500 Natal Inscribed 3½ per cent Stock (1914-39), at 85½	2,137	10	0			
£2,000 Western Australia Inscribed 4 per cent Stock (1942-62), at 63½	1,270	0	0			
£2,000 New Zealand Government 5 per cent Inscribed Stock (1946), at 94½	1,890	0	0			
£1,120 Victorian Government 3½ per cent Inscribed Stock, at 62½	700	0	0			
				9,747	10	0
Carry forward				£120,216	9	4

	£	s.	d.	£	s.	d.
Brought forward .				£120,216	9	4
VI. **Annuity Stock**—						
£32 Edinburgh and Leith Corporation Gas Commissioners, at 20⅝				660	0	0
VII. **Estimated Value** of Building—						
8 Eglinton Crescent	£5,000	0	0			
VIII. **Estimated Value** of Furniture, Paintings, Books, &c.	1,500	0	0			
				6,500	0	0
IX. **Arrears of Subscriptions** considered recoverable . .				286	0	6
X. **Balances** at 30th November 1931				689	3	5
Amount of General Funds .				£128,351	13	3
XI. **Special Funds**—						
Tweeddale Gold Medal Fund—						
Heritable Bond, at Commissioner's Rates				£500	0	0
£100 3 per cent Local Loans Stock, at 60½ . . .				60	10	0
Sum on Deposit Receipt with British Linen Bank . .				20	5	10
				£580	15	10
Fife and Kinross Perpetual Gold Challenge Cup Fund—						
£268 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 49½	£132	13	2			
£201 Do. do. 4 per cent First Guaranteed Stock, at 61	122	12	2			
Sum on Deposit Receipt with British Linen Bank	40	11	9			
				295	17	1
Paisley Perpetual Gold Challenge Cup Fund—						
£802 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 49½	£396	19	10			
Sum on Deposit Receipt with British Linen Bank	88	4	5			
				485	4	3
Renfrewshire Perpetual Gold Challenge Cup Fund—						
£668 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 49½	£330	13	2			
Sum on Deposit Receipt with British Linen Bank	81	8	9			
				412	1	11
William Taylor Memorial Prize Fund—						
£401 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 49½	£198	9	9			
Sum on Deposit Receipt with British Linen Bank	68	7	4			
				266	17	1
William Duthie Perpetual Silver Challenge Cup Fund—						
£260 2½ per cent Consolidated Stock, at 52¾ . .				137	3	0
Balances with British Linen Bank at 30th November 1931				90	16	6
Amount of Special Funds . .				£2,268	15	8

Edinburgh, 28*th December* 1931.—As Auditor of the Highland and Agricultural Society of Scotland, I have examined the Securities for the Investments as detailed in the above State of Funds and have found them in order. The Titles to the Heritable Estate and the Bonds for Sums lent on Heritable Security are certified by the Society's Law Agents to be in order.

GEO. JAMES GREGOR, C.A.

RALPH ANSTRUTHER, *Treasurer.*
ALEXANDER MURDOCH, *Chairman.*

Edinburgh, 6*th January* 1932.

ABSTRACT of the ACCOUNTS of the HIGHLAND and

CHARGE.

1. **Balances** as at 30th November 1930		£644 6 8
2. **Arrears** of Subscriptions outstanding at 30th November 1930	£361 6 6	
Whereof due by Members who have compounded for life, and whose arrears are thereby extinguished	4 10 0	
		356 16 6
3. **Interests and Dividends**—		
(1) Interests—		
On Heritable Bonds, less Income-tax .	£597 0 9	
On Railway Debenture and Preference Stocks, do.	1,343 18 0	
On Colonial Government Stocks, do. .	402 7 8	
On Annuity Stock, do. . . .	24 0 0	
On British Government Stocks, do. .	1,526 6 10	
	£3,893 13 3	
(2) Dividends on Bank Stocks, less Income-tax .	1,335 5 10	
		5,228 19 1
4. **Subscriptions**—		
Annual Subscriptions	£2,538 13 6	
Life Subscriptions	933 9 0	
		3,472 2 6
5. '**Transactions**' sold		34 0 11
6. **Income-tax** repaid for year to 5th April 1931 . . .		1,236 12 2
7. **Receipts** from Dumfries Show, 1930		458 13 4
8. **Receipts** from 100th Show, Edinburgh, 1931 . . .		19,937 10 1
9. **Warble** Fly Investigation, 1930—Refund of part of expenses .		175 0 0
10. N.D.D. **Examination** at Kilmarnock 1930—Refund of Expenses		265 12 2
11. **Donation**		25 0 0
Sum of Charge . .		£31,834 13 5

Edinburgh, 28*th December* 1931.—As Auditor of the Highland and Agricultural
of the Society for the year ending 30th November 1931 and have found them to be
Accounts I have prepared an Account of Charge and Discharge of the Intromissions
1931, of which the above is an abstract.

Edinburgh, 6*th January* 1932.

AGRICULTURAL SOCIETY of SCOTLAND for Year 1930-1931.

DISCHARGE.

1. ESTABLISHMENT EXPENSES—		
Salaries and Wages—Secretary, £1500; Chief Clerk, £450; other Clerks, £620; Typist, £160; Messenger's Wages, £150; Cleaning, £52; Retiring Allowance to Mrs Simpson, £30; Allowance to Mrs Cowie and Family, £120, 16s. 8d.; Allowance to Mrs Brown, £26 . . .		£3,108 16 8
Feu-duty, £22, 12s. 2d.; Rates and Taxes, £122, 13s. 6d. . . .		145 5 8
Coal, Gas, and Electric Light		66 7 4
Insurances, £70, 4s. 7d.; Special Annuity Premium, £51, 3s. 9d.; Telephone and Telegrams, £60, 16s. 1d.; Repairs and Furnishings, £49, 17s. 6d.		232 1 11
		£3,552 11 7
2. FEE to Auditor of Accounts for 1929-1930		120 0 0
3. EDUCATION—		
N.D.A. Examination	£63 12 3	
Forestry Certificates	12 1 0	
		75 13 3
4. CHEMICAL DEPARTMENT—		
Fee to Chemist	£100 0 0	
Analyses for Members and Expenses	374 6 1	
		474 6 1
5. VETERINARY DEPARTMENT—Medals to Students		20 7 0
6. DAIRY DEPARTMENT—N.D.D. Examination, 1930		163 7 3
7. DAIRY DEPARTMENT, 1931—		
Expenses of N.D.D. Examination held at Ayr . . .	£380 5 2	
Less Entry Fees	134 8 0	
		245 17 2
8. WARBLE FLY INVESTIGATION—		
Balance of Expenses, 1930	£165 1 7	
Expenses for 1931	303 19 4	
		469 0 11
9. EXPENSES attending New Implement Trials		22 10 11
10. SOCIETY'S 'TRANSACTIONS'		1,975 13 4
11. ORDINARY Printing, £184, 0s. 4d.; Advertising, £50, 16s. 6d.; Stationery, Books, &c., £331, 5s 6d.; Postages and Receipt Stamps, £158, 0s. 10d. .		724 3 2
12. SALARY to Consulting Engineer		250 0 0
13. INVESTMENT purchased from St Kilda Fund		425 0 0
14. MISCELLANEOUS Payments		386 8 9
15. EXPENSES in connection with Edinburgh Show, 1927 . . .		8 0 0
16. EXPENSES in connection with Dumfries Show, 1930		293 13 6
17. EXPENSES in connection with 100th Show, Edinburgh, 1931—Premiums, £2568, 15s.; Medals, £402, 2s.; Expenses of Show, £16,218, 15s. 9d. (as per page 365)		19,189 12 9
18. PREMIUMS and Medals for Local Shows and District Competitions . .		704 3 9
19. CERTIFICATES and Medals for Long Service		114 12 6
20. EXPENSES in connection with visiting sites for future Shows and attending Meetings		14 3 10
21. SPECIAL GRANTS—Animal Diseases Research Association, £200; Do. for Biochemical Department, £310; Glasgow Veterinary College, £100; Scottish Agricultural Organisation Society, £100; other Grants, £43, 3s. .		753 3 0
22. NEW Property at No. 8 Eglinton Crescent—Payments to Account of Contract Work, &c.		743 7 9
23. ARREARS removed from Subscription List at 30th November 1931 . .		133 13 0
24. ARREARS of Subscriptions outstanding at 30th November 1931 . .		286 0 6
25. BALANCES at 30th November 1931—		
On Account Current with Royal Bank of Scotland—		
Edinburgh Account	£628 3 0	
London Account	55 0 0	
	£683 3 0	
In hands of Secretary	6 0 5	
		689 3 5
SUM OF DISCHARGE . .		£31,834 13 5

Society of Scotland, I beg to report that I have examined the Books and Accounts correctly stated and sufficiently vouched and instructed. From the Books and of the Treasurer with the Funds of the Society for the year ending 30th November

GEO. JAMES GREGOR, C.A.

RALPH ANSTRUTHER, *Treasurer.*

ALEXANDER MURDOCH, *Chairman.*

ABSTRACT of the ACCOUNTS

CHARGE.

	£	s.	d.	£	s.	d.
1. GRANT FROM CORPORATION OF EDINBURGH	£500	0	0			
Less—For Restoration of Ground, &c.	250	0	0	£250	0	0
2. AMOUNT COLLECTED DURING SHOW—						
Gates	£9,259	11	0			
Grand Stand	2,256	5	9			
Catalogues and Awards	560	2	10			
Tickets sold	34	19	6			
Motor Garage and Chauffeurs' Tickets	235	16	0			
Cloak-Rooms and Lavatories	132	3	1			
				12,478	18	2
3. FORAGE SOLD				33	17	0
4. RENT OF STALLS				5,893	19	6
5. RENT OF REFRESHMENT BOOTHS				700	0	0
6. ADVERTISEMENTS IN CATALOGUE AND PREMIUM LIST				344	6	0
7. SUBSCRIPTIONS IN AID OF PREMIUMS				226	6	0
8. INTEREST ON TEMPORARY LOANS				9	14	5
9. MISCELLANEOUS				0	9	0
				£19,937	10	1

	£	s.	d.
Note.—From the balance of	£747	17	4
Deduct Premiums undrawn at 30th November 1931	55	0	0
	£692	17	4
To the above balance there falls to be added sums due by Exhibitors for fitting up of stands, &c., amounting to	11	16	11
Making the probable surplus	£704	14	3

EDINBURGH, *6th January* 1932.

of the HUNDREDTH SHOW, EDINBURGH, 1931.

DISCHARGE.

1.	SHOWYARD—						
	Fitting up of Showyard				£4,827	0	0
	Bell & Sime, Ltd.—Hire of Timber				3,687	12	1
	Rosettes, £80, 1s. 8d.; Penning Poultry and Rabbits, £42, 6s.; Horse-Shoeing, £37, 2s. 2d.; Buttermaking, £32, 14s. 1d.	£192	3	6			
	Hire of and Cartage on Sleepers, £172, 0s. 1d.; Railway Carriage on Office Luggage, Poultry, Rabbits, &c., £22, 11s. 3d.; Electric Wiring, £8; Turnstiles, £73, 10s.; Miscellaneous, £36, 11s. 4d.	312	12	8			
					504	16	2
	Salary to John Reid, Showyard Erector				£500	0	0
					£9,519	8	3
2.	FORAGE and Bedding for Stock				268	16	5
3.	POLICE				216	14	0
4.	TRAVELLING EXPENSES of Judges, Stewards, and Staff				155	19	11
5.	HOTELS AND LUNCHEONS—						
	Hotels for Directors, Stewards, Judges, and Guests	£249	3	3			
	Luncheons in Showyard for Directors, Judges, Guests, Attending Members, Members of Committee, Pressmen, Staff (including accommodation), Breakfasts, and Teas	643	4	1			
					892	7	4
6.	ASSISTANTS and Show Staff				749	18	0
7.	MUSIC and Military Display				467	10	0
8.	PRINTING, Members' Badges, Stationery, &c.				1,871	0	2
9.	ADVERTISING and Bill-posting				1,403	5	11
10.	GRANTS to Mrs Traill, £5; Forestry Exhibition, £40; Bacon Pig Competition, £15; Horticultural Section, £35				95	0	0
11.	VETERINARY INSPECTION				21	0	0
12.	CONCERT for Attendants				10	19	6
13.	SHOW TREASURER				100	0	0
14.	POSTAGES				156	14	0
15.	POST OFFICE and Telephones				51	17	3
16.	AMBULANCE				10	10	0
17.	INSURANCE				126	10	11
18.	MISCELLANEOUS				101	4	1
					£16,218	15	9
19.	PREMIUMS drawn at 30th November 1931				2,970	17	0
					£19,189	12	9
	CREDIT BALANCE				747	17	4
					£19,937	10	1

RALPH ANSTRUTHER, *Treasurer.*
ALEXANDER MURDOCH, *Chairman.*
GEO. JAMES GREGOR, C.A., *Auditor.*

ABSTRACT of the ACCOUNTS of the

CHARGE.

I. Funds as at 30th November 1930—			
£3,193 London and North-Eastern Railway Company 3 per cent Debenture Stock			£2,650 0 0
£5,551, 16s. 3d. 3½ per cent Conversion Stock . . .			4,216 18 2
£500 Queensland 3½ per cent Inscribed Stock, 1950-70 . .			450 1 0
£412 London Midland and Scottish Railway Company 4 per cent Debenture Stock			611 10 6
£190 London Midland and Scottish Railway Company 4 per cent Guaranteed Stock			259 1 11
			£8,187 11 7
Balance on Account Current with Royal Bank of Scotland .			252 12 0
			£8,440 3 7
II. Interest on Investments—			
On £3193 London and North-Eastern Railway Company 3 per cent Debenture Stock, for year to 30th June 1931		£95 15 10	
Less tax		21 11 0	
		£74 4 10	
On £5551, 16s. 3d. 3½ per cent Conversion Stock, for year to 1st October 1931 .	£194 6 2		
Less tax	43 14 2		
		150 12 0	
On £500 Queensland 3½ per cent Inscribed Stock, 1950-70, for year to 30th June 1931	£17 10 0		
Less tax	3 18 8		
		13 11 4	
On £412 London Midland and Scottish Railway Company 4 per cent Debenture Stock, for year to 30th June 1931 . .	£16 9 6		
Less tax	3 14 2		
		12 15 4	
On £190 London Midland and Scottish Railway Company 4 per cent Guaranteed Stock, for year to 30th June 1931 .	£7 12 0		
Less tax	1 14 2		
		5 17 10	
			257 1 4
III. Income-tax repaid for year to 5th April 1931 . . .			74 12 2
Sum of Charge . .			£8,771 17 1

Edinburgh, 6*th January* 1932.

ARGYLL NAVAL FUND for the Year 1930-1931.

DISCHARGE.

I. **Allowances** to the following eight Recipients—						
W. J. R. Campbell, (eighth year)				£40	0	0
M. W. G. Webster (sixth year)				40	0	0
H. C. D. MacLean (fifth year)				40	0	0
J. H. Dundas (second year)				40	0	0
K. C. Grieve (second year)				40	0	0
D. B. N. Mellis (second year)				40	0	0
J. L. Hallewell (second year)				40	0	0
D. V. Hugonin (first year)				40	0	0
				£320	0	0
II. **Miscellaneous**—William Blackwood & Sons Ltd.—Printing				0	6	6
III. **Funds** at 30th November 1931—						
£3193 London and North-Eastern Railway Company 3 per cent Debenture Stock	£2,650	0	0			
£5551, 16s. 3d. 3½ per cent Conversion Stock	4,216	18	2			
£500 Queensland 3½ per cent Inscribed Stock, 1950-70	450	1	0			
£412 London Midland and Scottish Railway Company 4 per cent Debenture Stock	611	10	6			
£190 London Midland and Scottish Railway Company 4 per cent Guaranteed Stock	259	1	11			
	£8,187	11	7			
Note.—The above Funds are entered at cost price. The market value at 30th November 1931 was £6219, 16s. 4d.						
Balance on Account Current with Royal Bank of Scotland	263	19	0			
				8,451	10	7
Sum of Discharge				£8,771	17	1

RALPH ANSTRUTHER, *Treasurer.*
ALEXANDER MURDOCH, *Chairman.*
GEO. JAMES GREGOR, C.A., *Auditor.*

VIEW OF RECEIPTS AND PAYMENTS
For the Year 1930-1931.

RECEIPTS.

1.	ANNUAL SUBSCRIPTIONS AND ARREARS received		£2,475 16 6
2.	LIFE SUBSCRIPTIONS		933 9 0
3.	INTERESTS AND DIVIDENDS—		
	Interests	£3,893 13 3	
	Dividends	1,335 5 10	
			5,228 19 1
4.	'TRANSACTIONS'—Sales and Advertisements		34 0 11
5.	INCOME-TAX repaid for year to 5th April 1931		1,236 12 2
6.	RECEIPTS from Dumfries Show, 1930		458 13 4
7.	RECEIPTS from 100th Show, Edinburgh, 1931		19,937 10 1
8.	WARBLE FLY INVESTIGATION, 1930		175 0 0
9.	N.D.D. EXAMINATION at Kilmarnock 1930—Refund of Expenses		265 12 2
10.	DONATION		25 0 0
			£30,770 13 3

PAYMENTS.

1.	ESTABLISHMENT EXPENSES—			
	Salaries and Wages and Allowance for Cleaning		£2,932 0 0	
	Retiring Allowances		176 16 8	
	Feu-duty, Taxes, Coal, Gas and Electric Light, Insurance, Repairs and Furnishings		443 14 11	
			£3,552 11 7	
2.	FEE TO AUDITOR of Accounts, 1929-1930		120 0 0	
3.	EDUCATION—N.D.A. and Forestry Certificates		75 13 3	
4.	CHEMICAL DEPARTMENT		474 6 1	
5.	VETERINARY DEPARTMENT		20 7 0	
6.	DAIRY DEPARTMENT—N.D.D. Examination, 1930		163 7 3	
7.	DAIRY DEPARTMENT—N.D.D. Examination, 1931		245 17 2	
8.	SOCIETY'S 'TRANSACTIONS'		1,975 13 4	
9.	WARBLE FLY INVESTIGATION, 1930		165 1 7	
10.	WARBLE FLY INVESTIGATION, 1931		303 19 4	
11.	EXPENSES attending New Implement Trials		22 10 11	
12.	ORDINARY Printing, Advertising, Stationery, Books, and Postages		724 3 2	
13.	SALARY to Consulting Engineer		250 0 0	
14.	MISCELLANEOUS Payments		386 8 9	
15.	PAYMENTS on account of Edinburgh Show, 1927		8 0 0	
16.	PAYMENTS on account of Dumfries Show, 1930		293 13 6	
17.	PAYMENTS on account of 100th Show, Edinburgh, 1931—			
	1. Premiums and Medals	£2,970 17 0		
	2. Expenses	16,218 15 9		
			19,189 12 9	
18.	PREMIUMS AND MEDALS for Local Shows and District Competitions		704 3 9	
19.	CERTIFICATES AND MEDALS for Long Service		114 12 6	
20.	EXPENSES in connection with visiting Sites for future Shows and attending Meetings		14 3 10	
21.	SPECIAL GRANTS—Animal Diseases Research Association, £200; Do. for Biochemical Department, £310; Glasgow Veterinary College, £100; Scottish Agricultural Organisation Society, £100; other Grants, £43, 3s.		753 3 0	
				29,557 8 9
	BALANCE OF RECEIPTS			£1,213 4 6

RALPH ANSTRUTHER, *Treasurer.*
ALEXANDER MURDOCH, *Chairman.*
GEO. JAMES GREGOR, C.A., *Auditor.*

EDINBURGH, 6*th January* 1932.

PROCEEDINGS AT BOARD MEETINGS.

MEETING OF DIRECTORS, 1ST APRIL 1931.

Mr J. E. KERR of Harviestoun, Dollar, in the Chair.

Present.—*Vice-President*—The Earl of Stair, D.S.O. *Ordinary Directors*—Mr James P. Brown; Mr Ian M. Campbell; Sir James Inglis Davidson; Mr Thomas Elder; Mr George Grant; Mr John Hewetson; Mr J. E. Kerr; Mr James R. Lumsden; Mr Robert Macmillan; Mr William Meiklem; Mr Robert Miller; Mr Alexander Murdoch; Mr Robert Park; Mr John W. Prentice; Mr John M. Roger; Mr J. P. Ross-Taylor; The Lord Scone; Major R. W. Sharpe; Mr John P. Sleigh; Mr Thomas Templeton; Mr Falconer L. Wallace; Mr Archibald Whyte. *Extraordinary Directors*—Major W. A. Baird; Mr Charles H. Beveridge; Major R. F. Brebner; Mr Thomas A. Buttar; Mr Norman H. Constable; Hon. T. G. P. Corbett; Mr John E. B. Cowper; Mr James Cruickshank; Convener William Duncan; Mr James Durno; Captain Thomas Elliot; Mr W. P. Gilmour; Mr A. Thornton Hunter; Mr William C. Hunter; Mr Hugh M. Leadbetter; Mr George G. Mercer; Dr T. G. Nasmyth; Mr Charles W. Ralston; Mr G. Bertram Shields; Mr Phipps O. Turnbull; Bailie John Young. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—J. F. Tocher, D.Sc., F.I.C. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c.

The Late Mr E. Douglas Paton, St Boswells.

Before proceeding with the business of the Meeting, the Chairman said it was with very deep regret that he had to refer to the death, since last Meeting, of a former Director of the Society, Mr E. Douglas Paton, Braehead, St Boswells. Mr Paton, he said, had had a long connection with the Society as a Member for nearly forty years, and as a Director continuously from 1902 to 1914. From 1906 to 1908 he acted as Steward of Parades and Stock, and in 1911 and 1912 as Steward of Implements. He was particularly interested in Hunters, and was well known as an extensive breeder of Cheviot Sheep.

Whilst a Member of that Board his kindliness of disposition and other sterling qualities earned the friendship and regard of his colleagues, and throughout the Border District his uprightness of character and outstanding integrity caused him to be held in the highest esteem.

A resolution of regret and sympathy was adopted, the Members present upstanding, and the Secretary was instructed to forward a copy thereof to the relatives of the deceased.

Letters.

The following letters were submitted:—

The Hon. Mrs Stirling of Keir.—Conveying thanks for resolution of regret and sympathy on the death of her husband, the late Brig.-General Archibald Stirling of Keir.

Animal Diseases Research Association.—Offering the Society cordial congratulations on the occasion of the Hundredth Show.

Students Representative Council, West of Scotland Agricultural College.—With regard to holders of the National Diploma in Agriculture being elected Members of the Society at reduced rates, and also suggesting that students be admitted to the Show at a reduced charge. It was agreed that the letter be remitted to the Finance Committee for consideration and report.

Hundredth Show—Edinburgh, 1931.

Attending Members.—The following Directors were appointed Attending Members: *Shorthorn*—J. P. Ross-Taylor, James Cruickshank; *Aberdeen Angus*—James M'Laren, Thomas Elder, The Earl of Airlie, K.C.V.O., M.C.; *Galloway*—John Hewetson, Captain John C. Stewart; *Belted Galloway*—Colonel Robert W. Walker; *Highland*—Archibald Whyte; *Ayrshire*—Thomas Templeton, W. P. Gilmour; *British Friesian*—John W. Prentice, Major R. F. Brebner; *Red Poll*—William C. Hunter; *Fat Cattle*—G. Bertram Shields; *Dairy Cows*—Bailie John Young; *Clydesdale Stallions and Colts*—John P. Sleigh, John Speir; *Clydesdale Geldings*—T. Mercer Sharp; *Clydesdale Mares, Fillies and Foals*—A. A. Hagart Speirs, Robert Miller; *Shires and Suffolks*—William Meiklem; *Hunters and Riding Ponies*—Major Robert W. Sharpe, John M. Allison, Major W. A. Baird; *Highland and Western Island Ponies*—Hon. T. G. P. Corbett, Captain Thomas Elliot; *Shetland Ponies and Horses in Harness*—James Kilpatrick, David S. Hutcheson; *Draught Geldings in Harness*—T. Mercer Sharp; *Blackface Sheep, Males*—Thomas A. Buttar; *Blackface Sheep, Females*—Charles W. Ralston; *Cheviot, Males*—Phipps O. Turnbull; *Cheviot, Females*—Donald MacDougall; *Border Leicester, Males*—The Hon. Walter T. H. Scott, Master of Polwarth; *Border Leicester, Females*—Captain John MacGillivray; *Half-Bred*—Falconer L. Wallace; *Oxford Down*—John Bryce Duncan; *Suffolk*—A. Thornton Hunter; *Shropshire and Dorset Horn*—J. T. M'Laren; *Leicester and Wensleydale Longwool*—T. G. Wilson; *Hampshire Down and Fat Sheep*—Alexander N. M'Caig; *Goats*—John M. Roger; *Large White Pigs*—George G. Mercer; *Middle White*—John E. B. Cowper; *Large Black*—George Will; *Poultry*—Dr J. F. Tocher, Alexander Forbes, Major Mark Sprot; *Honey, &c.*—Bailie William Poole; *Dairy Produce*—John Robson, Jun.; *Wool*—Convener William Duncan; *Rural Industries*—Dr R. Stewart MacDougall, C. H. Scott Plummer.

Catering.—A Minute of Meeting of Catering Committee, dated 31st March, was submitted and approved.

The Minute recommended that there be four licensed catering stands in the Showyard, these to be in the hands of the following caterers: Royal Athenæum, Aberdeen; Messrs Alexander Fairley & Sons, 83 Leith Street, Edinburgh; Messrs William and R. S. Kerr (Glasgow), Ltd., Union Bank Buildings, 37 Renfield Street, Glasgow; and Messrs M. Mitchell & Co., Ltd., 2 Gloucester Place, Edinburgh. The tea stand would again be in the hands of Mr John Henderson, Aberdeen. The British Women's Temperance Association would, as usual, have an unlicensed refreshment stand. In addition, it was recommended that a stand for teas and light refreshments be granted to Messrs Macvitties, Guest & Co., Ltd., Edinburgh.

It was agreed that a condition be imposed on all the caterers, as formerly, that only home-fed meat shall be supplied in the catering stands.

Buttermaking Competition.—A Report by a Special Sub-Committee was submitted and approved.

The Report stated that, in accordance with the powers given at last Meeting, the Special Sub-Committee had prepared a Prize List and Regulations for the proposed Buttermaking Competition, copies of which were laid on the table.

The Committee recommended the appointment of the following Judges: *Open Classes*—Mr James Kirkwood, Dairy School, Kilmarnock; *Championship*—Mr William Burkitt, B.Sc., Grange Hill, Bishop Auckland; *Novice Classes*—Mr A. A. M. Fisher, N.D.D., Manager, Dairy Department, St Cuthbert's Co-operative Society, Edinburgh.

Horticultural Section.—It was agreed that The Lord Scone be appointed Steward of the Section. It was also decided that the charge for admission to the Horticultural Section be 1s. on the Tuesday, Wednesday, and up till 3 P.M. on the Thursday, and 6d. thereafter.

Royal Scottish Benevolent Institution.—An application for 42 free tickets for the Institution's Honorary Local Secretaries was not entertained.

Free Stands, &c.—On an application, it was decided to grant a free stand, with 20 feet of frontage, to the Royal Dundee Institution for the Blind. It was also decided to give space, with 50 feet frontage, at a reduced rate, for the erection of a stand by the Rural Industries Bureau, London.

Show of 1933.

A letter was read from the Town Clerk of Perth inviting the Society to hold the Show of 1933 at Perth, and offering the free use of the South Inch as a site, together with free supplies of gas, water and electricity, and a grant of £100.

The Secretary was instructed to thank the Town Council of Perth for their offer and to inform them that the Sites Committee would visit Perth sometime in May.

Eradication of Bovine Tuberculosis.

A Minute of Meeting of Science Committee, dated 1st April, was submitted and approved.

The Minute stated that the Committee had carefully considered a Draft Report, prepared by the Convener, on the Scheme for the Eradication of Bovine Tuberculosis submitted by the Scottish Branch of the National Veterinary Medical Association, and the Report, after slight emendation, had been approved for transmission to the Board of Directors. It was proposed that printed copies of the Report, as revised, be circulated to Members of the Board for consideration at next Meeting.

National Horse Association.

Mr William Meiklem submitted the following Motion, of which notice had been given on the Agenda: "That the Society become affiliated to the National Horse Association of Great Britain."

Mr Thomas Templeton seconded.

Colonel F. J. Carruthers moved the previous question, and this was seconded by the Lord Scone.

On a vote being taken, the previous question was carried by a large majority.

Discolouration of Wool.

A letter was read from the Scottish Wool Association, Leith, stating that the Association had received strong protests from topmakers, spinners, manufacturers and wool buyers, with regard to the various colouring matters used by farmers in Scotland to dip their sheep when preparing them for the Lamb Sales and Annual Shows. The Association asked whether the Society could bring pressure to bear upon its Members to have the use of this colouring matter condemned.

The Secretary stated that, in acknowledging the letter, he had mentioned that an investigation was being carried out by the Society's Consulting Chemist as to the nature of these colouring substances. He had also pointed out that he did not see how the Society could bring pressure to bear upon its Members in regard to this question, and that it seemed to him the most effective method was for wool buyers to refuse to give the same price for coloured wool as for uncoloured wool.

Dr Tocher added that he was still conducting his investigations into the composition of the various substances used for colouring wool, and hoped to make known the result of those investigations by the end of summer.

Hundredth Show—Edinburgh, 1931.

A Minute of Meeting of the Special Hundredth Show Committee, dated 31st March, was submitted and approved.

The Minute contained a list of leading Agricultural Societies in the British Colonies and Dominions which had been invited to send Representatives to the Show. The list also included the names of other representative individuals whom it was suggested should be invited to be the Society's guests on that occasion. It was further suggested, in connection with the programme of arrangements for the week of the Show, that a dinner, at which the visitors and Judges would be entertained, be held on the Tuesday evening, and the reception by the Corporation of Edinburgh on the Wednesday evening. That the concert for Attendants be postponed from the Wednesday to the Thursday evening, and that on the Friday visits be arranged to the various Research Stations in the vicinity of Edinburgh. It was suggested that the following Reception Committee be appointed: Mr J. E. Kerr, Colonel F. J. Carruthers, Mr Alexander Murdoch, Mr Robert Park, Dr T. G. Nasmyth, Mr James M'Laren and Mr William C. Hunter.

Finance.

A Minute of Meeting of Committee, dated 1st April, was submitted and approved.

The Minute dealt with the following matters:—

Exportation of Horses Bill.—In accordance with the remit from the Board at last Meeting, the Committee considered a letter from the Scottish Society for the Prevention of Cruelty to Animals, with regard to the foregoing Bill.

After careful consideration, the Committee decided to recommend that, while not in favour of the Bill, No. 80, as at present drafted, the Directors express sympathy with any measure which had as its object the prevention of the export for slaughter of live horses, and which did not at the same time interfere with the legitimate trade in horses for other purposes.

The Committee further recommended that the Directors express their willingness, if a Draft Bill on these lines was submitted to them, to co-operate in adjusting its details.

St Kilda Fund.—A letter was submitted from the Department of Health for Scotland, enclosing lists of goods which had been despatched to St Kildans at Lochaline and Strome Ferry. The total cost of these goods amounted to £450.

The Secretary explained that the value of the fund at that date was £477, 13s. 5d., comprising—

£120 Royal Bank Stock . .	£420	0	0
On Current Account . .	53	1	7
Return of Income Tax . .	4	11	10
	£477	13	5

It was agreed that the Royal Bank Stock belonging to the fund be taken over by the Society into its ordinary funds, at the current price, thus providing cash to meet the payments then due.

MEETING OF DIRECTORS, 6TH MAY 1931.

Mr J. E. KERR of Harviestoun, Dollar, in the Chair.

Present.—*Ordinary Directors*—Mr J. Bryce Duncan; Mr Thomas Elder; Mr John Hewetson; Mr J. E. Kerr; Mr James Kilpatrick; Mr James R. Lumsden; Mr Robert Macmillan; Mr William Meiklem; Mr Robert Miller; Mr Alexander Murdoch; Mr John W. Prentice; Mr John M. Roger; The Lord Scone; Hon. W. T. H. Scott, Master of Polwarth; Mr T. Mercer Sharp; Major R. W. Sharpe; Mr A. A. Hagart Speirs; Capt. John C. Stewart; Mr Archibald Whyte. *Extraordinary Directors*—Major W. A. Baird; Mr Charles H. Beveridge; Major R. F. Brebner; The Hon. T. G. P. Corbett; Mr James Cruickshank; Convener William Duncan; Mr James Durno; Captain Thomas Elliot; Mr Alexander Forbes; Mr A. Thornton Hunter; Mr William C. Hunter; Mr James M'Laren; Mr J. T. M'Laren; Dr T. G. Nasmyth; Bailie William Poole; Mr Charles W. Ralston; Mr G. Bertram Shields; Major Mark Sprot; Mr Phipps O. Turnbull; Mr T. G. Wilson; Bailie John Young. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bart. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c. *Consulting Entomologist*—R. Stewart MacDougall, M.A., D.Sc.

Letter.

The following letter was submitted:—

Major A. C. Paton, St Boswells.—Acknowledging resolution of regret and sympathy on the death of his brother, the late Mr E. Douglas Paton, Braehead, St Boswells.

Hundredth Show, Edinburgh, 1931.

Royal (Dick) Veterinary College.—A Congratulatory Address, in the following terms, from the Royal (Dick) Veterinary College was presented by Dr T. G. Nasmyth:—

> "The Royal (Dick) Veterinary College craves permission to greet the Highland and Agricultural Society on the completion of a century of activity

that has conferred ever-increasing benefit on the Agriculture of Scotland and has firmly established a tradition of progress. While appreciating to the full the incalculable value of the service rendered by the Society to the nation in the domain of the science and practice of Agriculture, it is natural that the College should regard more particularly help and inspiration extended to Veterinary Science. If it is but seemly to hold in grateful recollection the stimulating and sustaining encouragement given by the Highland Society at Edinburgh to William Dick when, in 1823, he determined to bring the teaching of Veterinary Science north of the Border, it is no less becoming to acknowledge gratefully the extended patronage and aid the Highland Society's successor has bestowed upon the College of which William Dick was the founder. But while gratefully acknowledging a debt, the chief desire of the College is to congratulate the Highland and Agricultural Society on the creation of a notable record of increasing influence and power, and to express the hope that the history of the future may contain chapters equal in renown to those of the past."

O. Charnock Bradley, *Principal.*
T. Hudson Beare, *Chairman.* } *Board of*
T. G. Nasmyth, *Vice-Chairman.* } *Governors.*

April 1931.

The Chairman expressed the Directors' high appreciation of the Address, and the Secretary was instructed to convey the thanks of the Board to the Royal (Dick) Veterinary College.

Live Stock Judging Competition.—A letter was read from Mr John Speir to the effect that it should be clearly stated which breed of "Dairy Cattle" was to be put before the competitors, and that the breed put before them should not be mixed.

After discussion, the Secretary was instructed to reply that the class put before the competitors would not be a mixed class. The breed to be selected was dependent on the numbers available in the different sections.

Eradication of Bovine Tuberculosis.

Mr William C. Hunter of Arngask, Convener of the Science Committee, submitted a Report by that Committee on the Scheme for the Eradication of Bovine Tuberculosis prepared by the Scottish Branch of the National Veterinary Medical Association. In moving the adoption of the Report, Mr Hunter said the Committee had set out pretty fully how far they saw their way to commend the scheme, and how far the Government might reasonably be asked to go in carrying out the recommendations of the Veterinary Association. Within the last few days there had been published a Memorandum by the Ministry of Health, which confirmed to a very large extent the conclusions the Committee had arrived at. In one part of their Report the Committee laid considerable stress on the advantages of clinical examination of the udders of cows, followed by slaughter in the event of disease being detected, and it seemed to the Committee that that was probably the most practicable way of reducing the number of dangerous cows in this country. The Memorandum referred to contained a definite statement that cows suffering from tubercular mastitis were responsible for most of the infection of bovine tuberculosis. That was an authoritative statement, and it meant that the clinical examination recommended by the Committee was the kind of examination which commended itself to the Ministry of Health.

The Hon. G. Corbett, Rowallan, after referring to the efficacy of the double intradermal test, proceeded to point out that there were already in Scotland 126 herds which were free from tuberculosis, and producing Grade "A" (T.T.) or Certified Milk. In the West of Scotland, particularly in Ayrshire and Lanarkshire, they were making a very great effort to clear their herds in the face of every kind of discouragement. They looked to the Highland Society to assist them by at least giving its qualified approval. It was not intended to start the scheme on a large scale. It was intended that it should be started in small areas, without any great cost, and where it was likely to yield the greatest results. They felt that when a large number, up to 75 per cent, of producers in an area had freed their stock, they should not be liable to constant reinfection from the remaining 25 per cent, who were not taking sufficient interest in the public health and in the milk supply of the country, and that there ought to be, and must be, some form of compulsion if the scheme were to be carried on at all.

Mr T. G. Wilson, Carbeth, said the form of compulsion which the scheme suggested was not satisfactory. The Ministry of Health would have powers under that scheme which it would be altogether undesirable for it to have. He would have preferred if the Science Committee, instead of ruling out compulsion altogether, which in certain circumstances was almost essential, had stated that this form of compulsion was undesirable from their point of view, and until some other more acceptable to them was suggested they could not give the scheme their entire approval.

After some further discussion, Colonel F. J. Carruthers suggested that the best course would be for the Committee to take back the Report for further consideration, and this was agreed to.

Dumfries Show, 1930.

Mr P. O. Turnbull, Convener of the Implement Committee, submitted the following recommendations by the Judges of New Implements, with respect to Implements inspected by them at work on 23rd April and 5th May.

The New "Blairgowrie" Manure Sower, invented by Mr James Morgan, and entered by Messrs J. Bissot & Sons, Limited, Greenbank Works, Blairgowrie—Silver Medal.

The "Climax" Super Cultivator, entered by Messrs Walter A. Wood Co., Limited, Horsham, Sussex—No award.

Agricultural Depression.

A letter was submitted from Mr John Henderson, Secretary of the Scottish National Agricultural Committee, forwarding copy of correspondence which had passed between him and Mr J. F. Duncan, Secretary of the Scottish Farm Servants' Union. From the correspondence, it appeared that the Executive Committee of the latter body had decided to withdraw from its association with the Scottish National Agricultural Committee.

Glasgow Veterinary College.

An application was submitted from the Glasgow Veterinary College for a renewal of the grant of £100 for the current year.

The Secretary reported that the application had that day been considered by the Finance Committee, which had agreed to recommend that the application be granted. This was agreed to.

Hundredth Show—Edinburgh, 1931.

A Minute of Meeting of Special Hundredth Show Committee, dated 6th May, was submitted and approved.

The Minute dealt with various arrangements in connection with the forthcoming Show and the visit of H.R.H. The Prince of Wales.

It was recommended that holders of the Society's Long Service Gold Medal for fifty years' service or over be entertained to luncheon at the Show and given seats in the Grand Stand. If found practicable, the attention of the Prince of Wales would be drawn to the long service of these men.

Finance.

A Minute of Meeting of Finance Committee, dated 6th May, was submitted and approved.

The Minute dealt with the following matters:—

Students' Representative Council, West of Scotland Agricultural College.—In accordance with the remit from the Board at last Meeting, the Committee had considered the letter suggesting that holders of the National Diploma in Agriculture be elected members of the Society at reduced rates, and also that students be admitted to the Show at a reduced charge. The Committee recommended that no action be taken.

Society's Coat-of-Arms.—There was submitted the official Grant of Arms to the Society by the Lyon King of Arms, and the Secretary reported that the fees connected therewith amounted to a sum of £76, 8s.

MEETING OF DIRECTORS, 3RD JUNE 1931.

Mr J. E. KERR of Harviestoun, Dollar, in the Chair.

Present.—Vice-President—The Earl of Stair, D.S.O. *Ordinary Directors*—Mr James P. Brown; Mr Ian M. Campbell; Mr John Bryce Duncan; Mr Thomas Elder; Mr George Grant; Mr John Hewetson; Mr J. E. Kerr; Mr James Kilpatrick; Mr James R. Lumsden; Mr Robert Macmillan; Mr William Meiklem; Mr Robert Miller; Mr Alexander Murdoch; Mr Robert Park; Mr John W. Prentice; Mr John M. Roger; Mr J. P. Ross-Taylor; Mr T. Mercer Sharp; Major R. W. Sharpe; Mr John P. Sleigh; Mr A. A. Hagart Speirs; Captain John C. Stewart; Mr Thomas Templeton; Mr Falconer L. Wallace; Mr Archibald Whyte. *Extraordinary Directors*—Mr Charles H. Beveridge; Major R. F. Brebner; Mr Norman H. Constable; Mr James Cruickshank; Convener William Duncan; Mr James Durno; Captain Thomas Elliot; Mr W. P. Gilmour; Mr A. Thornton Hunter; Mr William C. Hunter; Mr Alexander N. MacCaig; Mr Donald MacDougall; Mr James M'Laren; Mr Alexander Munro; Dr T. G. Nasmyth; Bailie William Poole; Mr Charles W. Ralston; Mr John Speir; Mr Phipps O. Turnbull; Mr T. G. Wilson; Bailie John Young. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bart. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—J. F. Tocher, D.Sc., F.I.C. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c.

Hundredth Show, Edinburgh, 1931.

Department of Agriculture for Scotland.—The following letter, signed by Sir Robert Greig, on behalf of the Department of Agriculture for Scotland, was read, congratulating the Society on the occasion of the Hundredth Show:—

DEPARTMENT OF AGRICULTURE FOR SCOTLAND,
YORK BUILDINGS,
QUEEN STREET,
EDINBURGH, 11*th May* 1931.

SIR,

On behalf of myself and my colleagues in the Department of Agriculture for Scotland, I desire to convey congratulations to the Highland and Agricultural Society of Scotland on the occasion of the celebration of a century of work and progress.

From the beginning of its history the Society has concerned itself with the application of science to agriculture and with the promotion of agricultural education and research. It is largely due to the enlightened and far-sighted policy of the Society that Scotland readily embraced schemes of education and opportunities for research when these became possible on a larger scale through assistance from public funds. The improved breeds of live stock owe much to the Society. The advances in the machinery and equipment of Scottish farms and farm buildings are due in large measure to the encouragement which it has given to Scottish improvers. The recognition by the Society of the important part played by the loyal and skilled labour of the Scottish farm servant has doubtless helped to maintain the efficiency of farm management which is the admiration of other countries, and conduced to the goodwill which has in general characterised the relations of employer and employed.

It is fitting that a Department which is entrusted with the development of Agriculture in Scotland should acknowledge the invaluable work of the Society which preceded the formation of Government Departments and the provision of Government assistance.

In offering these congratulations, I beg to express the hope of the Department of Agriculture that the Highland and Agricultural Society will continue to extend its influence and expand its usefulness as the Premier Agricultural Society of Scotland.

I am, SIR,

Your obedient Servant,

ROBERT GREIG.

The Secretary,
Highland and Agricultural Society of Scotland,
8 Eglinton Crescent,
Edinburgh.

The Chairman expressed the Directors' cordial appreciation of the congratulations of the Department of Agriculture, and the Secretary was instructed to convey the thanks of the Board to the Department.

Church Service in Showyard.—The Secretary directed attention to the Church Service for Herdsmen, usually held in the Showyard on the Sunday preceding the Show. The experience in recent years was that the attendance of Herdsmen had dwindled to practically nothing—not more than four or five—and it had been found necessary to admit the public in order to provide a congregation. The result was that frequently people were admitted to the Showyard whose presence was undesirable. He regretted that it appeared the time had come for considering whether it was worth while continuing the Service. He had mentioned the matter to the Society's Chaplain, who stated that he had observed that it was not really an Agricultural congregation which attended the Services.

After some discussion, Mr C. H. Beveridge, Elphinstone Tower, Tranent, moved that the Service be discontinued. This was seconded by Bailie William Poole, Edinburgh, and agreed to.

Show of 1933.

The following Report by the 1933 Show Sites Committee was submitted, and, on the motion of the Chairman, seconded by Sir Ralph Anstruther, Bart., was unanimously approved.

Report of Sites Committee.

The Sites Committee visited Perth and Dundee on Thursday, 21st May, and inspected the sites offered by these towns for the Show of 1933.

At Perth, the site offered consists of that part of the South Inch which was used for the Show of 1924. The usable extent of this ground has, however, been reduced, by the construction of a recreation pond, to about 33 or 35 acres. There is, however, offered in addition an area of about 12 acres, which adjoins the former area, but lies on the opposite, or east, side of the Edinburgh Road. Taken together, these areas would give a show ground of from 45 to 46 acres. There would also be some ground available on the east side of the Edinburgh Road for the parking of cars.

The Town Council of Perth offer this site, together with free supplies of gas, water and electricity, and a grant of £100.

To render the site available it would be necessary that the portion of the Edinburgh Road between the two areas should be closed during the period of the Show, and that a short stretch of new road about three hundred yards in length be constructed to connect the Edinburgh Road with the Shore Road and so provide a bye-pass for traffic. Unfortunately the Town Council of Perth are not at the moment in a position to give a definite assurance that the Ministry of Transport will consent to the temporary closing of the Edinburgh Road; and the Town Council, it is understood, have not yet arrived at any decision as to the construction of the proposed new road.

At Dundee two sites were inspected. The first of these is known as Station Park, and lies immediately to the west of the northern end of the Tay Bridge, between the Perth and Dundee railway and the river. It consists of ground which has been reclaimed from the Firth by means of the erection of a retaining wall and filling up behind with town refuse and other material. About 50 acres would be available. The greater part of this has already been surfaced with eight inches of soil, and part has been sown out with grass. It is stated that the whole of the 50 acres will be levelled, surfaced, and sown out with grass this year so as to provide a good surface in 1933. A good road runs alongside the ground, and there is ample space for the parking of cars on the opposite side of this road. There are railway stations on both the Perth line and the main line leading north and south adjoining the ground, and a railway siding leads into the ground. The distance of this ground from the centre of the city is about one mile.

The other site is that portion of Caird Park on the west side of the Forfar Road and extends to about 45 acres. The surface is an excellent turf, but the ground is not level, there being a gradual slope from south to north. There is a railway station in the vicinity. This site is about two miles from the centre of the city on the north side of the town. The Corporation of Dundee have a fleet of buses which can take visitors to either site expeditiously.

In addition to the offer of a free site, the Corporation of Dundee offer a free supply of gas, water and electric power, to provide sanitary conveniences, and to make a grant of £1000 to the Show funds.

After careful consideration, the Committee have decided to recommend that the site offered by the Corporation of Dundee at Station Park be accepted. In arriving at this decision, the Committee have been influenced by the fact that it is not possible, at the moment, to assume that the Ministry of Transport will agree to the closing of the Edinburgh Road, at Perth, which is a main thoroughfare, and, further, that as the Show has not visited Dundee for a period of over forty years, it appears to them desirable that, being the centre of the Eastern portion of the Perth Show Division, Dundee should receive a visit from the Show at suitable intervals.

‘ *Transactions.*’

A Minute of Meeting of Publications Committee, dated 3rd June, was read and approved.

The Minute recommended payments to writers of articles in the current volume of ‘ Transactions ’ amounting to £181, 3s.

Glasgow Veterinary College.

On the motion of Sir Ralph Anstruther, Bart., Convener of the Finance Committee, it was unanimously agreed to confirm the recommendation adopted at last Meeting that a grant of £100 be given for the current year to the Glasgow Veterinary College.

Animal Diseases Research Association.

On the motion of Sir Ralph Anstruther, Bart., Convener of the Finance Committee, it was agreed to approve the recommendation of the Finance Committee of that date that the grant of £200 to the Animal Diseases Research Association be renewed for the current year.

Hundredth Show—Edinburgh, 1931.

A Minute of Meeting of the Special Hundredth Show Committee, dated 2nd June, was submitted and approved.

The Minute stated that the Committee had considered the details of the arrangements for the visit of His Royal Highness The Prince of Wales to the Show on Thursday, the 25th June, and contained a time-table of the various events. A list was also given of the representatives of Agricultural Societies and others who had been invited to attend the Show as guests of the Society, and who had intimated their acceptance.

Seventy-three holders of the Society's Long Service Gold Medal for 50 years' service or over had been communicated with, and, up to that date, 51 replies had been received. Of these, 23 had intimated that they would be prepared to attend the Show, on the invitation of the Society. As previously reported, those accepting would be invited to luncheon, and seats would be reserved for them in the Grand Stand, while the attention of H.R.H. The Prince of Wales would be drawn to them.

It was further recommended that the Lord Provost, Magistrates and Town Council of the City of Edinburgh be invited to visit the Show officially on Wednesday, the 24th June.

Congratulations to Lord Provost of Edinburgh.

On the motion of the Chairman, it was unanimously agreed that a message of congratulation be sent to The Right Hon. Sir Thomas B. Whitson, Lord Provost of the City of Edinburgh, and a Vice-President of the Society, on his receiving the honour of Knighthood from His Majesty The King.

EMERGENCY MEETING OF DIRECTORS HELD IN THE SHOWYARD, EDINBURGH, 20TH JUNE 1931.

Mr J. E. KERR of Harviestoun, Dollar, in the Chair.

Present.—Ordinary Directors—Mr Thomas Elder; Mr George Grant; Mr J. E. Kerr; Mr Robert Macmillan; Mr Robert Miller; Mr Alexander Murdoch; Mr Robert Park; Mr John W. Prentice; Mr J. P. Ross-Taylor; The Hon. Walter T. H. Scott, Master of Polwarth; Mr T. Mercer Sharp; Major R. W. Sharpe; Mr Thomas Templeton. *Extraordinary Directors*—Mr Charles H. Beveridge; Major R. F. Brebner; Mr John E. B. Cowper; Mr James Durno; Mr William C. Hunter; Mr James M'Laren; Mr George G. Mercer; Dr T. G. Nasmyth; Mr Phipps O. Turnbull. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont.

Hundredth Show—Edinburgh, 1931. *Outbreak of Foot-and-Mouth Disease.*

The Secretary reported the receipt, on the previous evening, of the following telegram from the Ministry of Agriculture and Fisheries. On receipt of the telegram, he had, after consultation by telephone with the Chairman of Directors and the Honorary Secretary, called that Emergency Meeting of Directors by telegraph and telephone. The Ministry's telegram was in the following terms:—

> "Society, Edinburgh.
>
> "In consequence outbreaks foot-and-mouth disease confirmed in Lancashire, Westmorland, Yorks North Riding, and Perthshire, Ministry has made Order as precautionary measure prohibiting all movement of animals in Great Britain except by licence for necessary purposes. Markets, Sales of store animals and Shows of Cattle, Sheep, Goats, and Swine prohibited. Minister regrets this will cause cancellation of these classes of animals from your Show next week.
>
> "AGRIFI, WESTRAND, LONDON."

The Secretary stated that, on receipt of the telegram, he had taken what steps were possible to stop the transport of Stock to the Show. Large numbers had arrived in Edinburgh in the course of the night, but had been sent back without being detrained. Some Cattle had arrived in the Showyard previous to the receipt of the telegram, and were, of course, still there—viz., 4 Shorthorns, 12 Aberdeen-Angus, 3 Highland, 1 Ayrshire, 20 British Friesians and 1 Red Poll. There were no Sheep or Pigs forward. These Cattle would be sent back as soon as the necessary licence could be obtained from the Local Authority.

The Secretary's action was confirmed, and it was unanimously agreed that the Show should proceed, the Meeting being of opinion that, with the large entry of Horses and many other attractions, there was sufficient to make an excellent exhibition even in the absence of the Cattle, Sheep and Pigs. The Secretary was instructed to take all possible steps to make this decision known to the public through the Press, and by means of wireless broadcasting, &c.

Various changes in the details of the Show arrangements, necessitated by the altered circumstances, were then discussed and agreed upon. These included cancelling of services of Judges of Cattle, Sheep and Pigs, arrangements for five classes of Horses for Stock Judging Competition, and engagement of 16/5th Lancers for additional Military Displays on Thursday and Friday afternoons, &c.

MEETING OF DIRECTORS HELD IN THE SHOWYARD, EDINBURGH, 24TH JUNE 1931.

Mr J. E. KERR of Harviestoun, Dollar, in the Chair.

Present.—Ordinary Directors—Mr James P. Brown; Mr George Grant; Mr John Hewetson; Mr J. E. Kerr; Mr James Kilpatrick; Mr James R. Lumsden; Mr Robert Macmillan; Mr William Meiklem; Mr Robert Miller; Mr Alexander Murdoch; Mr Robert Park; Mr John W. Prentice; Mr John Robson, Jun.; Mr J. P. Ross-Taylor; Hon. Walter T. H. Scott, Master of Polwarth; Mr T. Mercer Sharp; Major R. W. Sharpe; Mr John P. Sleigh; Mr A. A. Hagart

Speirs; Captain John C. Stewart; Mr Thomas Templeton; Mr Archibald Whyte. *Extraordinary Directors*—The Earl of Airlie, K.C.V.O., M.C.; Mr John M. Allison; Major W. A. Baird; Mr Charles H. Beveridge; Major R. F. Brebner; Mr Norman H. Constable; The Hon. T. G. P. Corbett; Mr John E. B. Cowper; Mr James Cruickshank; Convener William Duncan; Mr James Durno; Captain Thomas Elliot; Mr W. P. Gilmour; Mr William C. Hunter; Mr Hugh M. Leadbetter; Mr Alexander N. M'Caig; Mr Donald MacDougall; Mr James M'Laren; Dr T. G. Nasmyth; Mr Charles W. Ralston; Mr G. Bertram Shields; Mr John Speir; Mr Phipps O. Turnbull; Mr T. G. Wilson; Bailie John Young. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bart. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c. *Auditor*—George James Gregor, C.A.

Protests.

The Secretary reported that no Protests had been lodged.

Precepts.

The Chairman was authorised to sign the Precepts for the prizes awarded at the Hundredth Show.

Authority was given to draw upon the Society's Ordinary Funds to meet any deficit on the Show Account.

Return of Entry Fees.

It was agreed, in view of the cancellation of the classes for Cattle, Sheep, Pigs and Goats, that the entry fees paid for these classes be returned. This repayment would include payments for Attendants' Boxes, and for flooring stalls and boxes.

Donation.

A letter was submitted from Mr Alec Steel, Southend-on-Sea, forwarding a cheque for £25, being a donation to the Society's Funds, "In appreciation of many kindnesses showered on a humble Scotsman over many years."

The Secretary was instructed to express to Mr Steel the cordial thanks of the Directors for this generous donation.

MEETING OF DIRECTORS, 4TH NOVEMBER 1931.

Mr J. E. KERR of Harviestoun, Dollar, and afterwards Mr ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—*Ordinary Directors*—Mr James P. Brown; Mr Alexander Clark; Mr John E. B. Cowper; Mr J. E. Kerr; Mr James Kilpatrick; Mr James R. Lumsden; Mr James M'Laren; Mr Robert Macmillan; Mr Robert Miller; Mr Alexander Murdoch; Mr Robert Park; Mr John Robson, Jun.; Mr John M. Roger; Mr J. P. Ross-Taylor; Mr T. Mercer Sharp; Major R. W. Sharpe; Mr John P. Sleigh; Mr A. A. Hagart Speirs; Major S. Strang Steel; Capt. John C. Stewart; Mr Thomas Templeton; Mr Charley Tinker; Colonel Robert W. Walker; Mr Falconer L. Wallace; Mr Archibald Whyte; Mr George Will. *Extraordinary Directors*—Mr Norman H. Constable; The Hon. T. G. P. Corbett; Mr James Durno; Mr George Grant; Mr William Meiklem; Mr Walter Mundell; Mr Alexander Munro; The Hon. Walter T. H. Scott, Master of Polwarth; Mr Phipps O. Turnbull. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bart. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—J. F. Tocher, D.Sc., F.I.C. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c.

The Late Mr Hugh M. Leadbetter, Jedburgh.

Before proceeding with the business of the Meeting, the Chairman referred, with very deep regret, to the death of Mr Hugh M. Leadbetter, Knowesouth, Jedburgh.

Mr Leadbetter's connection with the Society, he said, dated back to 1884, when he first became a Member. Elected a Director in 1905, he served on that Board continuously for a period of fourteen years, and again as an Extraordinary Director in 1926, during the year of the Kelso Show, and in 1931 on the occasion of the Hundredth Show.

While taking a deep interest in all the business of the Society, he was more particularly interested in Hunting Horses, and his was a familiar figure in the Parade Ring at the Show, where for many years he acted as a Steward of Horses. He served on all the leading Committees of the Society, and they knew that he also gave unstinted service in public administrative affairs in his own district. His unfailing courtesy and genial disposition were recognised and appreciated by all his colleagues.

A Minute of regret and sympathy was submitted and adopted, the Members present upstanding, and the Secretary was instructed to forward a copy to Mrs Leadbetter and the family of the deceased.

The Late Mr Alexander P. Gordon of Bindal.

The Chairman also referred, with deep regret, to the death of Mr Alexander P. Gordon of Bindal, Portmahomack. Mr Gordon, he said, was one of the most prominent and progressive farmers in the North of Scotland. He was noted not only as a stockbreeder, but as a successful arable farmer, and took a leading part in all movements, both in his own district and throughout a wider area, which were calculated to advance the interests of Agriculturists. His energy and ability were widely recognised, and his personality was such as to earn the esteem and regard of a wide circle of friends.

He served as a Director of the Society for a term of four years, from 1924 to 1928, and they joined with his many friends in deploring his loss.

A Minute of regret and sympathy was submitted and adopted, the Members present upstanding, and the Secretary was instructed to forward a copy to Mrs Gordon and the family of the deceased.

The Late Mr William Carrick, Stirling.

The Chairman further referred, with deep regret, to the death of a former colleague on that Board—Mr William Carrick, The Baad, Stirling. Mr Carrick, he said, was a member of the Board for a period of six years, from 1914 to 1920; and again in 1929, on the occasion of the Alloa Show. He took a keen interest in the affairs of the Society, and was particularly assiduous in securing new members. His business activities made him widely known throughout Agricultural circles, and by all with whom he was associated his death was deeply deplored.

A Minute of regret and sympathy was submitted and adopted, the Members present upstanding, and the Secretary was instructed to forward a copy to the relatives of the deceased.

Chairman of the Board for 1931-1932.

On the motion of the Chairman, Mr J. E. Kerr of Harviestoun, Dollar, seconded by Mr James M'Laren, Cornton, Bridge of Allan, Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, was unanimously elected Chairman of the Board for the ensuing year.

Mr Alexander Murdoch, on taking the Chair, thanked the Directors for the honour they had done him.

On the motion of Mr Murdoch, a cordial vote of thanks was accorded to Mr J. E. Kerr for his services to the Society as Chairman of the Board of Directors during the past two years.

Mr Kerr suitably replied, and thanked the Board and Chairman for the expression of appreciation of his services. He also acknowledged the assistance he had received during his period of office from the Secretary and Staff of the Society.

Representatives on other Bodies.

The following were appointed representatives of the Society on the Boards of the undernoted Institutions for the ensuing year—viz.: *Edinburgh and East of Scotland College of Agriculture*—Mr John Stirton, Secretary, Highland and Agricultural Society. *West of Scotland Agricultural College*—Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire. *Aberdeen and North of Scotland College of Agriculture*—Dr J. F. Tocher, 41½ Union Street, Aberdeen. *Royal (Dick) Veteri-*

nary College—Dr Thomas G. Nasmyth, Canaan Lodge, Canaan Lane, Edinburgh. *Glasgow Veterinary College*—Mr Alexander Murdoch. *Scottish Milk Records Association*—Mr W. P. Gilmour, Balmangan, Kirkcudbright; Mr Alexander Munro of Leanach, Culloden Moor, Inverness; Mr Alexander Murdoch. *Standing Committee of Management of Scottish Plant Registration Station*—Mr James Elder, Athelstaneford Mains, Drem; Mr G. Bertram Shields, Rosebery Farm, Gorebridge; Mr J. P. Ross-Taylor, Mungoswalls, Duns. *Association for the Preservation of Rural Scotland*—The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.

Hundredth Show—Edinburgh, 1931.

The following letter from Sir Godfrey Thomas, Bart., Private Secretary to H.R.H. The Prince of Wales, was read:—

St James's Palace, S.W.,
1st July 1931.

Dear Mr Stirton,

The Prince of Wales desires me to convey his sincere congratulations to all who were responsible for the arrangements for his visit to the Hundredth Show of the Society last Thursday.

His Royal Highness was very glad to be able to come as President on this important occasion, and was extremely interested in all that he was shown.

May I take this opportunity of thanking you for all the assistance you gave me when we were discussing the preliminary arrangements for His Royal Highness's visit.

Yours very truly,
Godfrey Thomas,
Private Secretary.

J. Stirton, Esq.,
Highland and Agricultural Society of Scotland,
8 Eglinton Crescent,
Edinburgh.

A large number of other letters were submitted, expressing congratulations on the occasion of the Society's One Hundredth Show. Some of these letters also conveyed messages of thanks for hospitality received, and a large number expressed sympathy with the Society under the unfortunate circumstances whereby cattle, sheep and pigs were precluded from exhibition at the Show. Amongst these were letters from the following:—

The Royal Agricultural Society of England.
The Royal Dublin Society.
The Royal Ulster Agricultural Society.
The Royal Welsh Agricultural Society.
The Yorkshire Agricultural Society.
The Royal National Agricultural, &c., Association of Queensland.
The Royal Agricultural Society of Tasmania.
The Rhodesian Agricultural and Horticultural Society.
Canterbury, New Zealand, Agricultural and Pastoral Association.
Otago Agricultural and Pastoral Society.
Aberdeen-Angus-Cattle Society.
British Friesian Cattle Society.
Red Poll Cattle Society.
Shire Horse Society.
National Pig-Breeders' Association.
Farmers' Club, London.

Accounts.—The Secretary reported that a summary of the Accounts of the Hundredth Show had that day been submitted to the Finance Committee. These showed a probable balance on the right side of £667. This remarkable financial success, in face of the calamity which overtook the Show at the last moment, and after the full cost of a very big Show had been incurred, might be accounted for by four main factors:—

1. The fact of H.R.H. The Prince of Wales being President of the Society for the year, and his actual presence at the Show.
2. The loyal manner in which the Agricultural Community rallied to support the Society in its determination to carry on in face of all difficulties.
3. The great support the Show received from the citizens of Edinburgh, headed by the Lord Provost and Corporation of the City. It was a remarkable

fact that 15,000 persons, the majority of whom would be citizens of Edinburgh, paid for admission after five o'clock on the Thursday evening.

4. The most generous way in which the Show was supported by the Press. Throughout the year preceding the Show, the Press continuously fostered and maintained interest in the Show.

Sir Ralph Anstruther, Bart., Convener, said that the Finance Committee had received these Accounts with great satisfaction, and they congratulated the Secretary on the success of the Show.

Inverness Show, 1932.

Date of Show.—On a recommendation of the Shows Committee, and after full discussion, it was decided by a large majority that the date of the Show be fixed for Tuesday, 21st June, and three following days.

Judges.—The following were appointed a Selection Committee to draw up panels of Judges for consideration at next Meeting: Mr N. H. Constable, Mr James Durno, Mr George Grant, Mr J. E. Kerr, Mr James Kilpatrick, Mr James M'Laren, Mr Robert Macmillan, Mr Alexander Munro, Mr John Robson, Jun., Mr J. P. Ross-Taylor, Major Robert W. Sharpe, Mr Thomas Templeton, with the Chairman, Treasurer, and Hon. Secretary, *ex officii.*

Forage Committee.—The following Committee was appointed to make arrangements for the supply of forage, and report to the Board: Mr John W. Prentice (*Convener*), Mr John E. B. Cowper, Mr James M'Laren, Mr Duncan A. MacLennan, Mr Alexander Munro, Mr Robert Park, Mr Charley Tinker, Mr Phipps O. Turnbull and Mr George Will.

Show Contracts.—It was remitted to the following Special Committee, with powers, to arrange the contract for timber and other contracts in connection with the Showyard: Mr Alexander Munro (*Convener*), Mr James Durno, Mr James R. Lumsden, Mr James M'Laren, Mr R. Macmillan, Mr Alexander Murdoch, Mr John P. Sleigh, Mr Charley Tinker, Colonel Robert W. Walker, Mr Archibald Whyte, Mr George Will and Professor Stanfield.

Eradication of Bovine Tuberculosis.

A Report by the Science Committee on the Scheme for the Eradication of Bovine Tuberculosis prepared by the Scottish Branch of the National Veterinary Medical Association, which had been circulated to the Members of the Board, was submitted.

Mr Falconer L. Wallace of Candacraig, in moving the adoption of the Report, said he was doubtful if anything further would be heard of the Scheme in the meantime, in view of the present financial state of the country. He hoped the Board would accept the Report, even although some of them might think the Committee should have gone further. It was in the nature of a compromise.

The Hon. T. G. P. Corbett, Rowallan, said breeders in the South-West of Scotland would not be satisfied with the report. He would have liked the Board to pass a motion to the effect that they realised the importance of the Eradication of Tuberculosis, and recognised that this Scheme, while not a complete scheme in itself, formed a basis for discussion, with a view to action at some future time when the finances of the country would permit.

The Chairman stated that Mr Corbett should give notice of motion on these lines for a future Meeting.

The motion for the adoption of the Report was then declared carried.

National Mark Beef Scheme.

A letter was submitted from the Secretary of a Joint Committee appointed by the Minister of Agriculture and Fisheries and the Secretary of State for Scotland to review the progress made by the English and Scottish Schemes for grading and marking beef. The Committee desired that the Society should submit a written statement, setting out their views on the Scheme, and incorporating any suggestions that they might have to make as to its future operation.

After some discussion it was agreed that the matter be remitted to the following Committee for consideration and report: Mr James Durno (*Convener*), Mr J. P. Brown, Mr Alexander Forbes, Mr James M'Laren, Mr Robert Miller and Mr J. P. Ross-Taylor.

Panel of Arbiters.

A letter was read from the Department of Agriculture for Scotland, forwarding copy of the Panel of Arbiters constituted under Section 17 of the Agricultural Holdings (Scotland) Act, 1923, and inviting the Society to submit, for the Department's consideration, the names and qualifications of any gentlemen whom they regarded as suitable for appointment to the Panel.

The names of several gentlemen were submitted and approved, and the Secretary was instructed to communicate these to the Department of Agriculture. The list was as follows:—

Aberdeenshire—James Durno, Crichie, Inverurie.
Banffshire—Peter Scott, Gauldwell, Boharm.
Buteshire—George Laidler, Strabane, Brodick, Arran.
Dumfriesshire—J. J. Paterson, Terrona, Langholm.
Inverness-shire—Alexander Munro of Leanach, Culloden Moor, Inverness.
Roxburghshire—Richard Tait, Roxburgh Mains, Roxburgh.

Finance.

A Minute of Meeting of Finance Committee, dated 4th November, was submitted. The Minute dealt, *inter alia*, with the following matter:—

Quarantine Station for Scotland.—The Secretary had drawn the attention of the Committee to the fact that the Society's option on the ground at Whitefield Road, Govan, which was selected some time ago as a suitable site for a Scottish Quarantine Station, would expire at 31st December of the current year. The question arose as to whether it would be desirable to take steps to secure an extension of the option on the ground. In any case, intimation of the fact would require to be sent to the Empire Marketing Board. The feeling of the Committee was, on the whole, that the option might now be allowed to drop, but they thought it right to obtain the views of the Board on the subject.

The view was expressed by several members of the Board that it would be of greater utility to extend the Quarantine Station in London than to provide a Scottish Station in Glasgow, the chief reason being the lack of direct shipping facilities from Glasgow to countries purchasing animals for export.

The Minute of the Finance Committee was accordingly approved.

MEETING OF DIRECTORS, 2ND DECEMBER 1931.

Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—Ordinary Directors—Mr James P. Brown; Mr Ian M. Campbell; Mr Alexander Forbes; Mr John Hewetson; Mr J. E. Kerr; Mr James Kilpatrick; Mr James R. Lumsden; Mr Alexander Murdoch; Mr Robert Park; Mr John Robson, Jun.; Mr John M. Roger; Mr J. P. Ross-Taylor; Mr T. Mercer Sharp; Mr John P. Sleigh; Mr Charley Tinker; Colonel Robert W. Walker; Mr Falconer L. Wallace; Mr Archibald Whyte. *Extraordinary Directors*—Major A. D. Campbell; The Hon. T. G. P. Corbett; Mr James Durno; Mr George Grant; Lieut.-Colonel M. Grant-Peterkin; Captain John MacGillivray; Mr R. S. M'William; Mr Walter Mundell; Mr Alexander Munro; Mr John W. Prentice; The Hon. Walter T. H. Scott, Master of Polwarth. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bart. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c. *Consulting Entomologist*—R. Stewart MacDougall, M.A., D.Sc.

Letters.

The following letters were submitted:—

Mrs Leadbetter, Jedburgh.—Expressing thanks for resolution of sympathy on the death of her husband, the late Hugh M. Leadbetter.

Provost Donald Macdonald, Inverness.—Accepting office as a Director, and offering to do everything possible to make the forthcoming Show at Inverness a success.

Inverness Show, 1932.

A Report of the Shows Committee of 3rd November, which had been printed and circulated, was submitted and considered in detail.

The following matters arising out of the Report were dealt with :—

Hunter.—It was agreed to offer Special Prizes of £3, £2, and £1 for Foals shown with their Dams in the Brood Mare Class. It was also agreed that the Brood Mare Class be amended to read as follows: "Hunter Brood Mare, with Foal at foot, or due to foal before 31st July 1932."

Cheviot Sheep.—On a representation from the Breed Society, it was agreed to add a class for Ewe Lambs, with prize money £5, £3, and £2.

North Country Cheviot Sheep.—On a representation from the Northern Cheviot Sheep-Breeders' Club, it was agreed to provide four classes instead of three as suggested in the Minute—viz., Tup above one shear, Shearling Tup, Ewe above one shear with Lamb at foot, Shearling Ewe or Gimmer, with prize money £8, £5, and £3 in each class.

Shropshire Sheep.—Mr Falconer L. Wallace moved that the classes for Shropshire Sheep be deleted.

Sir Ralph Anstruther, Bart., seconded.

Captain John MacGillivray moved, as an amendment, that the section be retained, and this was seconded by Mr John Robson, Jun.

On a division, 14 voted for the Motion, and 13 for the Amendment.

It was accordingly decided that the Section be deleted.

Tweeddale Gold Medal.—The Secretary pointed out that the Tweeddale Gold Medal, which is offered for Shorthorns and Border Leicester Sheep in alternate years, was offered at the recent Hundredth Show in Edinburgh for Shorthorns, but was, of course, not awarded. Under these circumstances, the Medal would be again offered for Shorthorns at Inverness, but, as there would be sufficient income from the fund to provide two Medals, the Directors could, if they so desired, offer a medal also for Border Leicester Sheep.

It was unanimously agreed that this be done.

The Report of the Shows Committee, with the foregoing emendations, was then adopted.

A further Minute of Meeting of Shows Committee, dated 1st December, was submitted and approved.

The Minute dealt with the following matters—

Rural Industries Section.—It was agreed to grant an application from the Central Council of the S.W.R.I. for a free stand for the Northern Area with not more than 40 ft. of frontage in section 6.

Horticultural Section.—Before arriving at a decision to continue this Section, it was recommended that the Secretary be instructed to communicate with all the firms who exhibited last year, and with any other likely firms, with a view to ascertaining whether they would be willing to exhibit at Inverness in the event of a Horticultural Section being provided.

Convener of Local Committee.—On the Motion of the Chairman, seconded by Mr John Robson, Jun., it was unanimously agreed that the Duke of Sutherland, K.T., be appointed Convener of the Local Committee of Management.

Motor Enclosure.—A Report by the Special Committee appointed at last Meeting to visit Inverness and meet representatives of the Northern Counties Agricultural Society, with regard to the use of the latter Society's Showground at The Bughts as a parking-place for cars, was submitted.

The Report stated that the Committee, after visiting the ground on 14th November and considering the whole matter, had met the representatives of the Northern Counties Agricultural Society and made an offer of £60 for the use of the ground. On 17th November, a letter was received from the Secretary of the Northern Counties Agricultural Society declining the offer of £60 and offering to let the ground at a rent of £150.

After careful consideration, the Committee had decided that they could not see their way to recommend the Directors to agree to the proposed payment of £150. They suggested that the Directors adhere to the offer of £60 already made, whether or not it was found necessary to use the fields in question as a parking-place for cars.

After a statement by the Chairman, followed by a full discussion, it was eventually proposed that the sum to be offered to the Northern Counties Agricultural Society be increased from £60 to £100, and this was unanimously agreed to.

Special Prizes.—A large number of Special Prizes were accepted, and votes of thanks accorded to the donors.

Dundee Show, 1933.

The Chairman reported on a recent inspection of the Show site at Dundee by the Sites Committee. He said the Committee had gone over the ground carefully, and found that the Town Council were making excellent progress with the improvement of the site. He was satisfied that exhibitors, members, and the general public would be thoroughly satisfied with it.

National Mark Beef Scheme.

A Minute of Meeting of Special Committee appointed at last Meeting was submitted and approved.

The Minute stated that the Committee had considered the request by the Inter-Departmental Committee for a written statement of the Society's views on the Scheme for the Grading and Marking of Beef, especially in respect to the benefit which the Beef Feeder obtained from the scheme in the form of increased demand for his product, and the stimulation of production of higher quality stock. They recommended that a reply be sent to the following effect:—

(1) The Grading and Marking Scheme at present in operation in Scotland has proved of benefit to the producer of higher quality stock, as is shown by the increased demand for such stock.

(2) The Grading and Marking, to be effective, should be made compulsory at those centres where a Grading Officer is stationed. Until it is made so compulsory, the work of the Grader cannot be completely effective.

(3) The present Grades "Select" and "Prime" should be discarded as being misleading, and numbers should be adopted—*e.g.*, 1st, 2nd and 3rd.

(4) All imported carcases should be thoroughly marked as imported.

Warble Fly Investigation.

Dr R. Stewart MacDougall, Consulting Entomologist, submitted a verbal report on the work done in Scotland during the past season. He said that a detailed report would be printed and circulated to the directors and to all the members of the Society for consideration at the meetings in January.

Colonel F. J. Carruthers of Dormont said the success of these experiments was entirely due to the enormous amount of trouble taken by Dr MacDougall, and the Society and the whole of the Agriculturists of Scotland were much indebted to him for his work.

Damage by Deer.

A letter was read from the Department of Agriculture, requesting the views of the Society as to the desirability of a further meeting being convened by the Department on the subject of damage by deer.

It was agreed to reply to the effect that the Directors consider that another meeting should be held, and the following were appointed to represent the Society at the meeting, if and when convened—Mr Archibald Whyte, Mr Ian M. Campbell, and Mr Peter M'Intyre.

Finance.

A Minute of Meeting of Finance Committee, dated 2nd December, was submitted and approved.

The Minute dealt with the following matters:—

St Kilda Fund.—The Secretary reported that £450 of this fund had now been expended in purchasing articles for the St Kildans, in accordance with the previous decision of the Board, and in co-operation with the Department of Health. A sum of £27, 13s. 5d. remained in the fund unexpended, and it had been suggested by the Department of Health that this sum be allocated equally amongst the 35 St Kildans, each one being permitted to purchase articles or goods to the value of his share. The bills for the purchases would be sent to the Department, and, on being approved, would be paid direct out of the balance of the fund. The Committee recommended that the Directors approve of this procedure.

Scottish Agricultural Organisation Society.—It was recommended that the Grant of £100 to the Scottish Agricultural Organisation Society be renewed for the year 1932.

MEETING OF DIRECTORS, 6TH JANUARY 1932.

Mr ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—Ordinary Directors—Mr Ian M. Campbell; Mr Alexander Clark; Mr John E. B. Cowper; Mr Thomas Elder; Mr John Hewetson; Mr J. E. Kerr; Mr James Kilpatrick; Mr James R. Lumsden; Mr James M'Laren; Mr Robert Miller; Mr Alexander Murdoch; Mr Robert Park; Mr John M. Roger; Mr T. Mercer Sharp; Mr John P. Sleigh; Mr A. A. Hagart Speirs; Major S. Strang Steel; Captain John C. Stewart; Mr Thomas Templeton; Mr Charley Tinker; Colonel Robert W. Walker; Mr Archibald Whyte. *Extraordinary Directors*—Mr Norman H. Constable; Commander H. Dunbar Dunbar-Rivers; Mr James Durno; Mr George Grant; Captain John MacGillivray; Mr William Meiklem; Mr Alexander Munro; Mr John W. Prentice; Mr James Scott. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bart. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—J. F. Tocher, D.Sc., F.I.C. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c. *Consulting Entomologist*—R. Stewart MacDougall, M.A., D.Sc.

Finance.

A Minute of Meeting of Finance Committee, dated 6th January, was read and approved.

The Minute stated that the Accounts for the year 1930-31, as prepared by the Society's Auditor, had been submitted and approved, and signed by two members of the Finance Committee and by the Auditor.

Mr Thomas Elder of Stevenson said he wished to draw the attention of the Finance Committee to the cost of the 'Transactions.' In this year's Accounts the cost was nearly £2000. He hoped that next year the cost would be brought down by 25 per cent or 30 per cent. He moved that the Finance Committee take the matter into consideration.

The Secretary said the reason why the cost of the 'Transactions' was so high last year was that the volume included a complete list of the members of the Society. That list added 125 pages to the volume. It was printed only once in four years.

Sir Ralph Anstruther of Balcaskie, Bart., Treasurer, said that the matter would receive the consideration of the Finance Committee.

Inverness Show, 1932.

Convener of Local Committee.—The Secretary reported the receipt of a letter from the Duke of Sutherland agreeing to accept office as Convener of the Local Committee.

Stewards.—The principal Stewards of the various departments were appointed as follows: *Cattle*—Mr James Durno; *Horses*—Mr George Grant; *Sheep, Goats, Pigs and Wool*—Mr Robert Macmillan; *Poultry and Rabbits*—Mr James R. Lumsden; *Forage*—Mr John W. Prentice; *Grand Stands*—Major R. W. Sharpe; *Gates*—Mr Ian M. Campbell; *Catering, Honey, &c.*—Mr John E. B. Cowper; *Implements*—Mr J. P. Ross-Taylor.

Veterinary Inspector.—Major William Logan, M.R.C.V.S., Inverness, was appointed Veterinary Inspector for the Show on the usual conditions.

Motor Enclosure.—A letter was submitted from the Northern Counties Agricultural Society accepting the offer of £100 for the use of that Society's Showground at The Bughts as a parking place for cars.

Main Entrance.—Mr Alexander Munro of Leanach moved that the main entrance to the Show be from the Glenurquhart Road, and this was seconded by Mr Charley Tinker. The Secretary explained that the distance from the railway station to the point on the Glenurquhart Road where the main entrance would be situated was a quarter of a mile longer than the distance to the corresponding point on the River Ness side of the Showground.

After some further discussion it was unanimously agreed that the main entrance be from the Glenurquhart Road.

Minute of Shows Committee.—A Minute of Meeting of Shows Committee, dated 6th January, was submitted and approved.

The Minute dealt with the following matters:—

Prince of Wales Gold Medals.—A letter was submitted from Sir Godfrey Thomas, Bart., Private Secretary to the Prince of Wales, in which it was stated that His Royal Highness entirely approved of the proposal to award the medals which were not given at the Edinburgh Show last year to the same classes of Stock at Inverness this year.

Horse-Shoeing Competition.—The following were appointed a Committee of Management of the Horse-Shoeing Competition: *Directors*—Mr John E. B. Cowper; Mr Ralph S. M'William; Mr James Scott. *Shoeing-Smiths*—Mr Simon M'Donald, Culduthel Smithy, Inverness; Mr Charles M'Donald, Eastgate Smithy, Inverness; Mr Thomas M'Kenzie, Inchmore Smithy, Inverness.

It was also recommended that the following be appointed to act as Judges of Horse-Shoeing, along with the Society's Veterinary Inspector: Mr J. J. Hamilton, Blacksmith, Twynholm, Kirkcudbright; Mr John Bell, Blacksmith, Oban.

Buttermaking Competition.—It was recommended that a Buttermaking Competition be held on the same lines as at Edinburgh last year, and that Mr William Smith, Naldera, Colinton, be invited to act as Judge of the Novice and Ordinary Classes, and Mr William Burkitt, M.Sc., Grange Hill, Bishop Auckland, as Judge of the Championship Class.

Horticultural Section.—The Secretary had submitted the replies received from Horticultural firms who were Exhibitors last year, or who might be likely to exhibit at Inverness. From these, it appeared that thirteen firms intended to exhibit. It was accordingly unanimously recommended that the section be proceeded with. The question of the provision of shedding as last year, or of a marquee, had also been discussed, and the Committee had decided in favour of shedding, as before. It was also recommended that no charge be made for admission. It was recommended that consideration of further details be left to the following Committee: Mr Alexander Munro, *Convener;* Mr J. E. B. Cowper, Mr Robert Park, The Master of Polwarth, Captain John MacGillivray, Mr Charley Tinker.

Bacon Pig Competition.—The Secretary had submitted correspondence he had had with Professor Crew, of the Institute of Animal Genetics, with regard to securing the services of Dr Calder to carry out the arrangements for the Bacon Pig Competition. After hearing the correspondence it was unanimously decided to recommend that the Competition be not held this year.

Rural Industries.—The Secretary reported that the following had accepted the invitation to act as Judges in the Rural Industries Section: Miss Bruce, Highland Home Industries, 111A George Street, Edinburgh; Miss D. Angus, Gray's School of Art, Aberdeen; Miss M. B. Fulton, Royal Mental Hospital, Aberdeen; Mrs Balfour Graham, Levenbank, Leven.

Shropshire and Dorset Horn Sheep.—Letters were read from the Secretary of the Shropshire Sheep-Breeders' Association, dated 12th December, and from Mr T. A. Buttar, Corston, Coupar-Angus, dated 2nd January, as to the exclusion of Shropshire Sheep from the Prize List. A letter was also read from the Earl of Elgin, dated 25th December, as to the exclusion of Dorset Horn Sheep from the Prize List.

Captain John MacGillivray gave notice that he would move, at next Meeting of the Board, that the decision arrived at at last Meeting, both as regards Shropshire and Dorset Horn Sheep, be rescinded.

Timber Contract.—A Minute of Meeting of Show Contracts Committee, dated 6th January, was read and approved.

The Minute recommended the acceptance of a tender by Messrs James Walker & Company, Inverness, for the hire of the Timber for the Inverness Show.

Special Prizes.—A further number of Special Prizes were intimated, and votes of thanks accorded to the donors.

Warble Fly Investigation.

Colonel F. J. Carruthers of Dormont, Lockerbie, reported on the proceedings at a Meeting of the Committee of the Leathersellers' Company, held in London on 11th December. The Meeting, he said, expressed satisfaction with the work that had been done in Scotland, and resolved to embody a record of that work in the Report to be issued by the Leathersellers' Committee. The question of importation from Ireland was discussed, and it was resolved to endeavour to arrange for a Meeting with representatives of the Irish Free State in order to consider the possibility of treating animals at the port of embarkation in Ireland. There was a strong and growing feeling in England in favour of compulsory measures. That was especially so in those areas where cattle had been treated for the last two or three years. He did not know whether that feeling had reached Scotland, but he believed it would come. The Leathersellers' Committee had resolved to ask for an interview with the Minister of Agriculture in order to see what should be done in this matter.

Colonel Carruthers proposed that, during the coming season, the investigation should be continued so as to cover the six counties in Scotland so far not

dealt with. The investigation would be on a smaller scale than last year, and it was probable that no grant would be obtained from the Leathersellers' Company. Anything that was done would require to be done at the Society's own expense.

It was unanimously agreed that the investigation be continued for another year.

Scottish Agricultural Organisation Society.

On the motion of Sir Ralph Anstruther, Bart., it was unanimously agreed to confirm the proposed grant of £100 to the Scottish Agricultural Organisation Society for the year 1932.

Quarantine Station for Scotland.

A letter was read from the Empire Marketing Board, dated 21st December, in which it was stated that the Board had decided that they did not wish to renew the option on the site in Glasgow provisionally selected for a Quarantine Station for Scotland.

Inspection of Growing Crops of Potatoes.

A letter was submitted from the Department of Agriculture for Scotland, referring to a Meeting which was held in February last regarding the proposed extension of the Scheme for the Inspection of Growing Crops of Potatoes so as to include inspection for certification in respect of freedom from Virus Diseases. The letter stated that the Department would be glad to discuss the subject further with representatives of the various bodies interested, and wished to know what date, during the week commencing 18th January, would suit the Society for the proposed Conference.

The Secretary stated that Mr P. O. Turnbull, Bowmont, Dunbar, was the Society's representative at the previous Conference, and it was agreed that he should communicate with Mr Turnbull on the subject.

Show of 1934.

Mr Alexander Murdoch, Chairman, moved: "That provided a suitable site is available, and satisfactory financial and other arrangements can be made, the Society's Show of 1934 be held in the Glasgow Show Division."

He said that the last time the Show was held in the Glasgow Show Division (1925), it was held in the city of Glasgow, and was one of the most successful Shows the Society had ever held. That was largely due to the support given by the Corporation of Glasgow and the great personal interest that was taken in the Show by the late Sir Thomas Paxton, a former Lord Provost. The year 1934 would be the 150th anniversary of the formation of the Society, which was founded in 1784, and it might be worth while to consider whether a special effort should be made to make the Show one out of the ordinary, in view of the fact that the Hundredth Show last year was robbed of a great deal of its success through the unfortunate outbreak of foot-and-mouth disease.

Mr James Kilpatrick, Craigie Mains, Kilmarnock, seconded, and the Motion was unanimously agreed to.

Agricultural Policy.

Captain John MacGillivray of Calrossie, Nigg, Ross-shire, referred to a Motion, of which he had given notice for that Meeting, but which the Chairman had decided could not be printed on the Agenda in the form submitted.

Mr Alexander Murdoch, Chairman, said he had taken the responsibility of holding the Motion over till next Meeting, as it was not in a proper form to be included on the Agenda for that Meeting.

Captain MacGillivray said that the terms of the Motion would be amended with a view to its being submitted at the Meeting on 3rd February.

Finance.

A Minute of Meeting of Finance Committee, dated 6th January, was submitted and approved.

The Minute recommended that an invitation from the National Trust for Scotland, to nominate a representative to the Council of that body, be accepted, and that Sir Ralph Anstruther, Bart., be nominated as the Society's representative.

MEETING OF DIRECTORS, 3RD FEBRUARY 1932.

Mr **Alexander Murdoch**, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—Ordinary Directors—Mr Ian M. Campbell; Mr Alexander Clark; Mr John E. B. Cowper; Mr Thomas Elder; Mr John Hewetson; Mr James Kilpatrick; Mr James R. Lumsden; Mr James M'Laren; Mr Robert Macmillan; Mr Robert Miller; Mr Alexander Murdoch; Mr Robert Park; Mr John M. Roger; Mr J. P. Ross-Taylor; Mr T. Mercer Sharp; Major R. W. Sharpe; Mr A. A. Hagart Speirs; Major S. Strang Steel; Colonel Robert W. Walker; Mr Falconer L. Wallace. *Extraordinary Directors*—Mr Norman H. Constable; Hon. T. G. P. Corbett; Mr George Grant; Lieut.-Colonel M. J. Grant-Peterkin; Captain John MacGillivray; Mr William Meiklem; Mr Walter Mundell; Mr Alexander Munro; Mr Andrew Pollock; Mr John W. Prentice; Mr James Scott; Hon. Walter T. H. Scott, Master of Polwarth; Mr Phipps O. Turnbull. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—J. F. Tocher, D.Sc., F.I.C.

H.R.H. The Duke of York as President.

The Secretary reported that, in accordance with instructions received at last meeting, he had written to His Royal Highness The Duke of York requesting permission to put forward his name to the General Meeting on 1st June, for election as President of the Society for the year 1933.

A letter was read from Commander H. G. Campbell, D.S.O., R.N., Assistant Private Secretary to His Royal Highness, stating that His Royal Highness had gladly consented to be President of the Society for the year 1933.

The Chairman expressed the satisfaction this intimation gave the Members of the Board, and said that he was sure the news would be welcome to all Members of the Society.

Letters.

The following letters were submitted:—

The Earl of Stair, D.S.O.—Communicating the terms of a letter he had received from Captain J. C. Dun Waters, as representative of the Vancouver Agricultural Society, expressing thanks for the invitation to the Hundredth Show as a guest of the Society.

Leathersellers' Company.—Forwarding cheque for £250, being contribution towards expenses of Warble Fly Investigation in 1931.

Pot Still Malt Distillers' Association of Scotland.—Communicating the terms of a Resolution adopted by the Committee of that Association with respect to a reduction in the duty on spirit.

Science.

A Minute of Meeting of Committee, dated 3rd February, was submitted and approved.

The Minute dealt with the following matters:—

Schedule of Unit Values.—The Schedule of Unit Prices of Manures and Feeding-Stuffs for the current year had been revised, and it was recommended that it be printed and issued as usual.

Values of Unexhausted Manures and Feeding-Stuffs.—It was recommended that the Table of Values of Unexhausted Manures and Feeding-Stuffs be re-issued, and that it be remitted to Dr Tocher, Consulting Chemist, to revise it in terms of the new Unit values.

Inverness Show, 1932.

Assistant Stewards.—Assistant Stewards of the various departments were appointed as follows: *Cattle*—Mr Alexander Munro; *Horses*—Mr John P. Sleigh; *Sheep, Goats, Pigs and Wool*—Mr N. H. Constable; *Forage*—Mr T. Mercer Sharp; *Grand Stands*—The Master of Polwarth; *Gates*—Mr James P. Brown; *Implements*—Mr Charley Tinker.

Forage.—A Minute of Meeting of Forage Committee, dated 3rd February, was read and approved.

The Minute stated that the Committee recommended the acceptance of the offer by the Forage Supply Co., Ltd., Springfield Mills, Leith, to supply forage for the Show.

Shropshire and Dorset Horn Sheep.—Captain John MacGillivray of Calrossie, Nigg, Ross-shire, submitted the following Motion of which notice was given at last Meeting, and a copy of which appeared on the Agenda, signed, in terms of Rule 38 of the Standing Orders, by the mover and ten other directors—

> "That the decision arrived at by the Board of Directors on 2nd December 1931, that the Classes for Shropshire and Dorset Horn Sheep be deleted from the Prize List, be rescinded."

Mr Falconer L. Wallace of Candacraig, Strathdon, seconded, and the Motion was unanimously agreed to.

Captain MacGillivray then moved—"That Classes for Shropshire and Dorset Horn Sheep be reinserted in the Prize List."

Mr Falconer L. Wallace seconded, and this was unanimously agreed to—the classes and prize money to be as at Dumfries in 1930.

Minute of Shows Committee.—A Minute of Meeting of Shows Committee, dated 3rd February, was read and approved.

The Minute dealt with the following matters:—

Horticultural Section.—A Minute of Meeting of a Sub-Committee was recommended for acceptance by the Board.

The Minute recommended that the Classes be the same as at Edinburgh last year—viz., (*a*) Collections of Flowers, Plants, Shrubs, or Vegetables; (*b*) Formal Gardens or Rock Gardens; and that a prize of £10 and a Gold Medal be awarded to the best exhibit in each class, and, in addition, Silver Medals, not exceeding six in number, be awarded to other exhibits of outstanding merit.

It was further recommended that Mr John T. Jeffrey, City Superintendent of Parks, Edinburgh, be invited to act as Judge, and that The Lord Scone be again asked to act as Steward of the Section.

Free Stands.—A list of free sites, free stands and free tickets, usually granted at the Show, was submitted and revised.

Highland Cattle.—On a request from the Breed Society, it was recommended that separate classes be provided for Two-year-old and Yearling Heifers, with prize money £10, £5, £3 and £2 in each class.

Proof of Prize List.—A proof print of the Prize List and Regulations was submitted, and, subject to the foregoing additions and emendations, was approved.

New Implements.—The following were appointed Judges of New Implements: Mr J. P. Ross-Taylor, Mungoswalls, Duns; Mr P. O. Turnbull, Bowmont, Dunbar; Mr John E. B. Cowper, Gogar House, Corstorphine.

Special Prizes.—Further Special Prizes were accepted, and votes of thanks accorded to the donors.

Inspection of Growing Crops of Potatoes.

Mr P. O. Turnbull, Bowmont, Dunbar, reported that he had attended, with representatives of other Agricultural bodies, a Conference convened by the Department of Agriculture for Scotland, on 21st January, with regard to a proposal to extend the scheme for the Inspection of Growing Crops of Potatoes so as to include inspection for certification in respect of freedom from virus diseases. The Department proposed to bring the scheme into operation in 1932. A leaflet giving particulars of the scheme was available for the information of Members.

On the Motion of the Chairman, Mr Turnbull was thanked for attending the Conference, and for his report.

Show of 1934.

The following were appointed a Committee to visit and inspect available sites for the Show of 1934, in the Glasgow Show Division—Mr James Durno; Mr George Grant; Mr Robert Macmillan; Mr J. P. Ross-Taylor; Mr J. E. Kerr; Mr Alexander Murdoch; Sir Ralph Anstruther, Bart.; Colonel F. J. Carruthers; Professor R. Stanfield.

Agricultural Depression.

Captain John MacGillivray of Calrossie, Nigg, Ross-shire, moved a Resolution, the terms of which appeared under his name on the Agenda of the Meeting.

It was agreed to hold the Resolution as read.

The Motion was seconded by Mr Alexander Munro of Leanach, Culloden Moor.

Captain MacGillivray, on being called upon by the Chairman to speak to the Resolution, said he was prepared, with the consent of his Seconder, to curtail the Resolution so as to include only the general principles, and leaving out the clauses containing the detailed policy.

With this emendation, the Resolution was then, after some discussion, unanimously adopted, and it was remitted to Captain John MacGillivray, Mr N. H. Constable, Mr Alexander Murdoch, Colonel F. J. Carruthers and the Secretary to make any necessary verbal adjustments.

The Resolution, as finally adjusted by the Committee, was in the following terms :—

"We, the Directors of the Highland and Agricultural Society of Scotland, realising the deplorable state of Scottish Agriculture in practically all its branches, respectfully ask the Government to give the earliest possible attention to the devising of means whereby the present distress may be relieved.

We take it to be matter of unanimous public opinion that it is for the benefit, alike of those directly interested in the land and of the whole nation, that agricultural production be increased so that the country may, as far as possible, be self-supporting, and that increased employment may be available to maintain a healthy population on the land. In order to accomplish this, it is essential that the home producer should have the first call on the home market, subject to proper safeguards for the protection of the consumer. To such safeguards we attach the highest importance, inasmuch as, without them, no system can be expected to have inherent stability.

As practical men, we desire especially to emphasise that the recent extensive turnover of arable land to grass has had the effect not only of decreasing production and employment, but also of upsetting the balance between winter and summer keep for stock, with serious consequences in its effect on the health of sheep stocks. Without an increased area of cultivation, by means of which alone fresh young pasture can continuously be obtained, this evil may be expected seriously to increase with most unfortunate consequences.

The better marketing of home produce is essential to the wellbeing of the community, but no marketing scheme, however well ordered in itself, can function effectively until the first call on the home market has, under reasonable conditions, been secured.

We respectfully urge upon the Government the necessity of taking immediate steps on the lines indicated to place the Agricultural Industry on a satisfactory basis."

Date of Board Meeting.

Mr Alexander Munro moved that the next Meeting of the Board be held on Tuesday, 1st March, instead of Wednesday, 2nd March, in view of the fact that the latter date clashed with the date of the Scottish Stallion Show in Glasgow.

Mr William Meiklem seconded.

Mr J. P. Ross-Taylor moved, as an amendment, that the Meeting be held on the usual date, and this was seconded by Mr Robert Macmillan.

On a division, the Motion was carried by 16 votes to 11 for the amendment.

MEETING OF DIRECTORS, 1st MARCH 1932.

Mr **Alexander Murdoch**, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—Ordinary Directors—Mr James P. Brown ; Mr Ian M. Campbell ; Mr Alexander Clark ; Mr John E. B. Cowper ; Mr Thomas Elder ; Mr John Hewetson ; Mr James R. Lumsden ; Mr James M'Laren ; Mr Robert Macmillan ; Mr Robert Miller ; Mr Alexander Murdoch ; Mr John M. Roger ; Captain John C. Stewart ; Mr Archibald Whyte. *Extraordinary Directors*—Mr Norman H. Constable ; Hon. T. G. P. Corbett ; Mr James Durno ; Mr Duncan A. MacLennan ; Mr Walter Mundell ; Mr John W. Prentice ; Mr Phipps O. Turnbull. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—J. F. Tocher, D.Sc., F.I.C. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., M.Inst.C.E., F.R.S.E

H.R.H. The Prince of Wales.

A letter was read from Sir Godfrey Thomas, Private Secretary to H.R.H. The Prince of Wales, expressing thanks for the Group Photograph taken on the occasion of the Society's Hundredth Show. His Royal Highness had been pleased to accept the photograph, and expressed gratification at having this souvenir of the occasion.

Resignation of Director.

A letter was read from The Lord Scone in which His Lordship stated that the time had come when, to his unbounded regret, he felt he ought to resign his Directorship of the Society, as it would not be possible for him to attend more than a very few of the Meetings of Directors, or Committees, owing to his Parliamentary duties. Lord Scone added that he would continue to exert every possible effort in Parliament on behalf of Scottish Agriculture, and that he hoped he might, in years to come, again be a Director of the 'Highland.' He had nothing but the most pleasant memories of his association with his fellow Directors and the Officials of the Society.

The Chairman said he was sure they all regretted that Lord Scone had found it necessary to resign for the reason stated. In the circumstances, they had no option but to accept his resignation.

It was remitted to the three Ordinary Directors for the Perth Show Division to bring forward, at a future Meeting, the name of a Director to fill the vacancy.

Inverness Show, 1932.

A Minute of Meeting of Shows Committee, dated 1st March, was read and approved.

The Minute dealt with the following matters :—

Judges.—Alterations in the List of Judges, and new appointments made since the list was published in December, were reported.

Horse-Shoeing Competition.—Contributions towards the prizes and prize-money for the Horse-Shoeing Competition were intimated, and it was recommended that the thanks of the Board be tendered to the donors.

Rule 44.—A discussion took place with regard to the application of Rule 44 to the use of white powder on Cheviot Sheep. It was, however, recommended, in view of the fact that a report by Dr Tocher on the effect of colouring matter on Wool was coming up at next Meeting, to defer further consideration of this matter until that Meeting.

S.W.R.I.—It was recommended that the Central Council of the S.W.R.I. be granted an additional 20 feet of shedding—making 60 feet in all—free of charge.

Motor Enclosure.—It was recommended that the Motor Enclosure at Inverness be again placed in the hands of the Royal Scottish Automobile Club—the Secretary to point out to the Club certain steps they should take to prevent cars being diverted to unofficial parking places.

Horticultural Section.—In view of the resignation of The Lord Scone, it was agreed to appoint Mr A. A. Hagart Speirs of Elderslie, Steward of the Horticultural Section.

Catering.—Minutes of Meetings of Catering Committee, dated 2nd February and 1st March, were read and approved.

The Minutes recommended that there be three Licensed Catering Stands on this occasion, instead of four, which is the usual number, and that these be in the hands of the following Caterers :—

Royal Athenæum, Ltd., Aberdeen.
Messrs Alexander Fairley & Son, 85 Leith Street, Edinburgh.
Messrs M. Mitchell & Co., Ltd., 2 Gloucester Place, Edinburgh.

The Tea Stand would be in the hands of the successor to the late Mr John Henderson, Westburn Bakery, Aberdeen.

The British Women's Temperance Association would, as usual, have an unlicensed refreshment stand.

Special Prizes.—Special Prizes were intimated, and a vote of thanks accorded to the donors.

Inverness-shire Farmers' Society.

A letter from the Inverness-shire Farmers' Society was submitted, forwarding Resolution passed by the Committee of Management of that Society on 26th January, with regard to the duty on Spirit, and the question of a tariff on imported Malting Barley.

Damage by Deer.

A communication from the Department of Agriculture for Scotland was read with reference to the Conference on the above subject held on 23rd February. The Society was represented at the Conference by Mr Archibald Whyte, Spott, Kirriemuir. A general discussion had taken place, in the course of which the representatives of the Farmers' Associations stated that they did not object to the existence of deer forests, provided the numbers of deer were not excessive, having regard to the character of the forest, and its capacity for carrying deer, or other classes of Stock. They were chiefly concerned with the question of surplus deer straying from deer forests, and doing damage to good agricultural land. They were anxious that, as soon as possible, suitable legislation should be introduced to remedy and prevent this state of affairs.

Mr Archibald Whyte said there was a good attendance at the Conference of representatives of the various interests concerned. A very friendly discussion had taken place, and a Committee was appointed to draw up proposals for suitable legislation. He hoped that something useful would come of it.

Finance.

A Minute of Meeting of Committee, dated 1st March, was read and approved.

The Minute dealt, *inter alia,* with the following matter :—

'*Transactions.*'—In accordance with the remit from the Board in January, the Committee had considered the cost of printing and issuing the volume of 'Transactions.' The Secretary had submitted details showing the cost of printing, binding, postage, &c. In this connection, it appeared that the last volume, of which the total cost was £1975, was an exceptionally large one, in respect that it contained the following additional items: (1) the List of Members, extending to 126 pages, at an additional cost for printing alone of £183; (2) the Prize List of the Hundredth Show, which was 28 pages longer than normal, and cost £24 extra for printing. The extra size of the volume entailed £30 extra for binding, and, for the same reason, the postage cost an additional £88. These items would not be incurred in connection with the volume for the current year.

In view of these explanations, the Committee considered that the increased cost last year was accounted for, and recommended that the volume continue to be printed and issued as in the past, care being taken to effect any saving in cost that may be found possible.

PROCEEDINGS AT GENERAL MEETINGS.

GENERAL MEETING, 3RD JUNE 1931.

The Earl of STAIR, D.S.O., *Vice-President*, in the Chair.

Message from H.R.H. The Prince of Wales.

The Chairman read the following message from His Royal Highness The Prince of Wales, President of the Society :—

"ST JAMES'S PALACE, S.W.

"In sending my good wishes to all present at the half-yearly General Meeting of the Highland and Agricultural Society of Scotland, I need hardly say how much I am looking forward to being present at the Hundredth Show in Edinburgh on June 25th.

"I know that the Society's Shows have been of inestimable benefit in providing the farmer with opportunities of obtaining first-hand information and of examining the results of the efforts and experiments of others.

"I wish all success to the Society in this important year.

(Signed) "EDWARD P., President."

The message was received with applause, and it was agreed that the following reply be sent to His Royal Highness :—

"The members of the Highland and Agricultural Society, in General Meeting assembled, have received with much appreciation and pleasure His Royal Highness's gracious message, for which they desire to express their most sincere thanks. They are much gratified at the prospect of His Royal Highness being present at the Hundredth Show, and they desire to assure him of a most cordial welcome."

New Members.

Two hundred and fifty-nine candidates were balloted for and admitted members of the Society.

Office-Bearers, 1931-1932.

The Secretary stated that it had been found impossible to complete the list of office-bearers in time for its publication in the Press, fourteen days before that meeting, as required by the Charter. It would accordingly be necessary to adjourn the meeting, for the purpose of electing the office-bearers, to the meeting of members in the Showyard at Edinburgh on 25th June.

On the motion of the Chairman, this was agreed to.

Special Grants.

Sir Ralph Anstruther of Balcaskie, Bart., Treasurer of the Society, moved approval of the following Special Grants which were recommended by the Board of Directors :—

(1) £200, for the current year, to the Animal Diseases Research Association.
(2) £100, for the current year, to the Glasgow Veterinary College.
(3) £30, for the current year, to the Highland Reel and Strathspey Society.

Mr James M'Laren, Cornton, seconded, and the grants were approved.

Hundredth Show, Edinburgh, 1931.

Mr Robert Park, Brunstane, Portobello, Convener of the Shows Committee, reported that arrangements for the forthcoming One Hundredth Show to be held at Edinburgh on 23rd June and three following days were well advanced. As previously reported, the Corporation of Edinburgh had granted the Society the use of Saughton Park as a site for the Show. The extent of ground available was about sixty acres, and the whole of this would be required. The lay-out of the Showyard on that occasion was different from that in 1927, and it was believed would be found to be more convenient. The work of erecting the various buildings had proceeded expeditiously, and might be said to be approaching completion.

An excellent entry had been obtained in all sections of Live Stock. The extended classification and largely increased prize-money had been justified by a corresponding increase in the entries. The number of Cattle, 652, was the largest in the history of the Society, the nearest approach to that figure being 580 in 1884, on the occasion of the Centenary of the foundation of the Society. There was a very large entry of horses, and the number of sheep entered, 684, was almost a hundred more than at the great show of sheep at Kelso in 1926.

Implements, machinery and general exhibits had also secured an exceptional entry, the increase over last year being more than 25 per cent, or an additional 2000 lineal feet of stand frontage.

The new Horticultural Section had met with gratifying support. The Stock Judging and Horse-Shoeing entries were considerably above the average, while the entry for the new Buttermaking Competition was so large that four days would require to be devoted to the competition instead of three, as originally proposed.

It was perhaps needless to mention that great and increasing interest was being manifested in the visit, as President of the Society for the year, of H.R.H. The Prince of Wales. His Royal Highness would visit the Show on Thursday, the 25th June, and would preside at the Meeting of Members in the Showyard at 12 noon, and present the Champion Gold Medals to the winners in the Parade Ring during the afternoon. It was hoped that the people of Scotland would mark their appreciation of this Royal visit by attending the Show in great numbers, and offering His Royal Highness a right royal welcome.

The prospects for the success of the Meeting were most encouraging, and given favourable weather the forthcoming Show should establish a new record in the history of the Society.

Inverness Show, 1932.

Mr Alexander Munro of Leanach reported that there was nothing now to report regarding the prospects for the Show to be held at Inverness in 1932. As already reported, an excellent site at The Bughts had been placed at the disposal of the Society by the Town Council of Inverness. The site was both convenient and accessible, and should be found suitable in every way. Active arrangements for the Show would begin immediately after the Show of the present year.

Show of 1933.

Mr J. E. Kerr, Chairman of Directors, reported that a Committee of Directors had recently been examining prospective sites for the Show of 1933 at Perth and Dundee. They had submitted a full report on these sites to the Board of Directors, who had unanimously decided that the Show be held at Dundee on the ground known as the Station Park.

Agricultural Education.

Colonel F. J. Carruthers, Convener of the Education Committee, reported on the Examination held at Leeds in April last for the National Diploma in Agriculture. 162 candidates presented themselves for examination; 41 candidates were from Scotland. As a result of the Examination, 61 Diplomas were awarded; no candidate obtained the Diploma with Honours on that occasion. Of the 162 candidates, 12 appeared for all the subjects, and of these 7 passed. 79 had passed certain subjects previously, and were completing the Examination that year, and of these 54 obtained the Diploma. The remaining 71 presented themselves for groups of three, four, or five subjects, and of these 30 passed in the subjects for which they appeared, and were entitled to appear for the remaining subjects in 1932 or 1933.

Warble Fly Investigation.

Mr William C. Hunter of Arngask, Convener of the Science Committee, reported on the Warble Fly Investigation. The experiments undertaken in 1930 in breeding areas in Kirkcudbright, Roxburgh, Perthshire and Kincardineshire were being continued in 1931, partly for comparative purposes. Through the courtesy of the three Agricultural Colleges and the various County Organisers, Demonstration Centres had been opened up in at least half the counties in Scotland. Considerable interest was being shown in the work, and it might, at this stage, be said safely that there was now, to the farmer's hand, a cheap, practical and easy-to-apply dressing. The experiments would end in mid-June, and a final report would follow in due course.

Report by Chemist.

Dr J. F. Tocher, Consulting Chemist to the Society, submitted a report on the work done in that department during the past half-year. The substance of Dr Tocher's report appears on pp. 195-200 of this volume.

Vote of Thanks to Chairman.

On the motion of Sir Ralph Anstruther of Balcaskie, Bart., a cordial vote of thanks was accorded to the Earl of Stair for presiding.

(*The Meeting then stood adjourned until Thursday, 25th June, in the Showyard, Edinburgh, for the election of Office-Bearers,* 1931-1932).

GENERAL MEETING OF MEMBERS HELD IN THE SHOWYARD, EDINBURGH, 25TH JUNE 1931.

His Royal Highness The Prince of Wales, K.G., K.T., President of the Society, in the Chair.

His Royal Highness The Prince of Wales, in opening the proceedings, said :—

My Lord Provost, my Lords, and Gentlemen,—I am very pleased, very proud, to be President of the Society this year, and to have been able to come up and attend the Hundredth Show. It is very regrettable that only a few days ago there should have been an outbreak of foot-and-mouth disease, which has stopped any cattle coming to the Show. But I am told that in this connection thirty-eight different farms have already been infected in Great Britain during the last few days, of which sixteen are in Scotland, and that large parts of Perth and Kinross, Fifeshire, Angus and Kincardine have been declared as infected areas.

Every effort is obviously being made to stop the further spreading of the disease, and one of the usual necessary measures has been to stop the movement of cattle. However unfortunate and very inconvenient this stopping of the movement of cattle is, I am sure the whole agricultural industry will agree with me if I take the opportunity of appealing to all stock owners for the maximum amount of support to the authorities in their efforts to stamp out this disease, which has in the past caused such immense loss to the agricultural industry.

Now the work of such a Society as this is an expression of the effort of the agricultural community by voluntary organisation to help itself. From the very nature of farming and stock-breeding operations, demonstration is always more valuable than verbal statement. I know the benefit that the Society's Shows have been to the farmer in Scotland by enabling him to gain a first-hand knowledge of the latest improvements and developments.

This Society has from the outset taken a special interest in agricultural education and research. In conjunction with the Royal Agricultural Society of England it holds examinations and grants diplomas in agriculture and dairying, and also grants certificates in forestry. It has taken an active part in promoting the establishment of agricultural colleges in Scotland, and has from time to time supported these institutions with financial assistance. It has also given generous contributions to the research stations founded in more recent years throughout this country.

A prominent feature of this Society's activities has been the encouragement through local Societies of the improvement of live stock and the practice of agriculture in the various districts. It at present gives money premiums and medals to the value of about £1000 every year, these being distributed through the district societies over the whole of Scotland. I am looking forward, amongst other things this afternoon, to seeing a parade of the Society's gold medallists with over fifty years' record of service at one farm or with one employer. I am looking forward to that, because I am sure the award of these medals has done not a little to strengthen the friendly relations which have always existed between farmers and their employees in Scotland.

I will now call on Lord Elgin to move a vote of thanks to the Corporation of Edinburgh.

Votes of Thanks.

The Earl of Elgin and Kincardine, C.M.G., said his duty, which was a pleasant one, was to propose a resolution of cordial thanks to the Corporation of Edinburgh for the assistance they had given to the Society in the arrangements for this Centenary Show. The resolution was worded as follows: "That a cordial vote of thanks be accorded to the Lord Provost and Magistrates and Councillors of the City of Edinburgh for the excellent site provided for the Show, for their co-operation with the Society in all matters tending to promote the success of the Show and for their financial contribution to the Show Funds." His Lordship said that they were indeed grateful for the co-operation which had been so unstintingly given. Not only was the site for the Show an exceedingly good one from the point of view of lay-out and allowing plenty of room, but it meant the ungrudging and unstinted co-operation of the citizens, apart from those who represented them on the Town Council, because they had given up a golf course for the benefit of agriculture. His Royal Highness had referred to the fact of this being the Centenary Show and the importance of such a Show. Lord Elgin said he felt quite certain that, although they were met on this centenary gathering with some regret because part of the Show was not able to be there, still they were met with courage in their hearts, courage to look forward to the future, and courage starting from this fact, which they would do well to cultivate, that agriculture would not succeed unless the people in the towns believed in co-operation and believed in agriculture themselves. Their national poet, in his tribute to Edinburgh, summed up his feelings in these words, and they were particularly appropriate to their meeting that day:—

"Thy sons, Edina, social, kind,
  With open arms the stranger hail;
Their views enlarg'd, their liberal mind,
  Above the narrow rural vale,
Attentive still to sorrow's wail,
  Or modest merit's silent claim,
And never may their sources fail,
  And never envy blot their name."

They had had to face difficulties in this Show, not only the difficulties which the President had referred to, but Edinburgh itself wept the first day of their assembly there. They were glad, indeed, that these tears had dried up, and for the last two days they had enjoyed brilliant sunshine for their gathering. He wished to pay tribute to one who was not mentioned in the formal resolution, and who had given unstinted work to help in the lay-out of the Show—the Superintendent of Parks, Mr J. T. Jeffrey.

Mr William C. Hunter of Arngask, Glenfarg, who was called upon by the President to second the resolution, said the Society valued highly the gifts with which the Corporation had endowed them, but perhaps they valued even more the goodwill that had been behind them. Nor would they forget the citizens of Edinburgh. They had rallied in their thousands to support the Show. During the week-end they were rather naturally cast down, but the citizens and people of the country round about had justified them in going full steam ahead.

Lord Provost Sir T. B. Whitson, in reply, made reference to the wet weather on the opening day of the Show, and remarked jocularly that when he heard that certain members were going round showing a telegram from Inverness intimating that in the capital of the Highlands they had beautiful sunshine, he had arranged with the Council to have the sunshine turned on, and the consequence was that in the last two days they had had beautiful weather. He thought they deserved every bit of it for their pluck in carrying on in the very adverse circumstances. Lord Elgin had referred to the fact that part of the site had been used as a golf course, and had thanked the golfers for taking an interest in agriculture. He did not know how Lord Elgin played golf, but he knew there was a good deal of agriculture about it when he played. He thanked Lord Elgin for what he had said about the site. There was a question as to whether it would in future be available for such shows. He did hope his fellow-members in the Town Council would take a second thought and really try to do something to reserve that great site. The Town Council always took great interest in the Show, and they would be pleased to see the Society in Edinburgh at another time.

Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, proposed a vote of thanks to the Earl of Stair, Convener, and members of the local Committee of Management for the efficient and successful manner in which they had carried out the arrangements for the Show. As they were probably all aware, the members of the Board of Directors of the Highland and Agricultural Society were drawn from all the show districts, but whenever the Show was to be held in a particular district it was necessary to reinforce their numbers by enlisting the services of local members of the Society. In Edinburgh they had had a large body of coadjutors, who had given every possible assistance. Lord Stair, as they knew, was one who did not spare himself when it came to a question of public duty, and all those who had been associated with him as the local Committee of Management had supported him heartily and ungrudgingly. In these days, he hoped he might be allowed to say that to see a demonstration of those who were willing to put themselves to the public service for no reward except thanks was an estimable sight, and one which, he hoped, would be emulated in all spheres of the national life. It was the case that the voluntary service of so many in the past had been one of the main factors in leading our people to take a high place among the nations of the earth. He hoped that Lord Stair and the members of the local Committee would believe that the thanks they gave them was not a perfunctory action, but was a sincere recognition of the great trouble they had taken to make the Show a success.

Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, in seconding, endorsed all that had been said by the mover of the resolution. There was one name, however, he would like to mention particularly in connection with the work of the Committee, and that was Dr Nasmyth, Edinburgh, who had been of great service.

Dr T. G. Nasmyth, Edinburgh, acknowledged the vote of thanks on behalf of the Committee. The labours of the Show Committee, he said, were always difficult, and but for the support of the Corporation and officials of the Society it would not have been possible for the Committee to carry out their work properly. All the members of the Committee were animated with a burning desire to make the Centenary Show worthy of their President, H.R.H. The Prince of Wales, and also worthy of all their friends at home and those who had come from abroad. A great deal of commiseration had been extended to the members of the Society, but he would like to extend even more definite commiseration to those stock breeders and exhibitors who for weeks and months had been preparing animals for the Show and were turned back at the last moment. He thought their sympathy should be fully extended to them in the unfortunate circumstances.

Colonel F. J. Carruthers of Dormont, Lockerbie, moved that the Society express its appreciation of the complete and satisfactory arrangements made by the railway companies for the expeditious transport of stock, implements and visitors to the Show. Unfortunately for the railway companies the transport of stock to the Show, owing to the competition of the road services, was annually becoming less, and, unfortunately for the Society, it was this year less than ever. But he thought they had had plenty to do in bringing the implements into the yard, and, judging by the crowds which he saw in the showyard on Wednesday and that day, he was sure they must have been very busy bringing visitors. They of the Society were to a certain extent partners with the railway companies in this respect, that if they had a large and successful Show they both benefited.

Mr Alexander Munro of Leanach, Inverness, in seconding, said he sympathised with the railway companies in the loss of traffic due to the outbreak of foot-and-mouth disease, and expressed the hope that the Show at Inverness next year would be such as to compensate the companies for what they lost on the present occasion.

Major C. H. Stemp, Superintendent of the Southern Scottish Area, L.N.E.R., replying on behalf of the railway companies, said that nowadays railway companies had so much criticism levelled at them that any comments favourable to them came rather as a surprise. Some of the criticism they considered was unmerited. Agriculturists in the past were ever ready to support the railways, and he thought they had reason to do so. They had in the Border towns some of the largest sales in this country. These sales could never have reached the importance and fame they had without the support and co-operation of the railways. People came to the railways when they had big loads that the road haulage could not shift, when they wanted speedy concentration and speedy dispersal, and they got it. He would like them to think that the railway companies were not so bad as they were painted. Referring to the foot-and-mouth disease outbreaks, Major Stemp said the railways were fellow-sufferers with the Society. They had lost a great deal. When they received intimation that the arrangements, which had taken weeks to make, were all upset, they had, on very short notice, to reorganise everything. They were indebted to Mr Stirton, the Secretary, for the valuable help they got from him.

Election of Office-Bearers.

Mr J. E. Kerr of Harviestoun, Dollar, Chairman of Directors, formally moved the election of the following office-bearers for the year 1931-32. The Hon. Walter T. H. Scott, Master of Polwarth, seconded, and their election was unanimously approved:—

President.—The Duke of Portland, K.G., P.C., Langwell, Wick.

Vice-Presidents.—The Duke of Sutherland, K.T., Dunrobin Castle, Golspie; Sir Hector Munro of Foulis, Bart., Dingwall; Sir Archibald H. M. Sinclair, P.C., M.P., of Ulbster, Bart., Thurso; The Hon. Evan Baillie of Dochfour, Inverness.

Ordinary Directors, 1928.—Mr Archibald Whyte, The Spott, Glenprosen, Kirriemuir; Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire; Mr Thomas Templeton, Sandyknowe, Kelso; Mr Robert Park, Brunstane, Portobello; Colonel Robert W. Walker, Culter House, Milltimber, Aberdeenshire; Mr James R. Lumsden of Arden, Dumbartonshire; Mr John Bryce Duncan, Newlands, Dumfries; Mr John Robson, jun., Lynegar, Watten, Caithness.

1929.—Mr A. A. Hagart Speirs of Elderslie, Houston House, Houston; Major Robert W. Sharpe of The Park, Earlston; Mr Thomas Elder of Stevenson, Haddington; Mr John P. Sleigh of St John's Wells, Fyvie; Mr T. Mercer Sharp, Bardrill, Blackford; Mr George Will, Acrehead, Dumfries; Mr James P. Brown, Dipple, Fochabers; The Lord Scone, Scone Palace, Perth.

1930.—Mr J. P. Ross-Taylor, Mungoswalls, Duns; Mr Robert Miller, Ferrygate, North Berwick; Mr Falconer L. Wallace of Candacraig, Strathdon (1 Grosvenor House, Park Lane, London, W. 1); Mr J. E. Kerr of Harviestoun, Dollar; Mr Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive; Mr Charley Tinker, Kilmartin, Inverness; Mr John M. Roger, Balgove, St Andrews; Mr James Kilpatrick, Craigie Mains, Kilmarnock.

1931.—Mr John E. B. Cowper, Gogar House, Corstorphine; Mr Alexander Forbes, Rottie, Banff; Mr James M'Laren, Cornton, Bridge of Allan; Mr John Hewetson, Baltersan, Newton-Stewart; Mr Ian M. Campbell, Balblair, Invershin; Mr Alexander Clark, Strathore House, Thornton; Captain John C. Stewart of Murdostoun, Newmains; Major Samuel Strang Steel of Philiphaugh, Selkirk.

Extraordinary Directors.—Mr Alexander Munro of Leanach, Culloden Moor, Inverness; Mr N. H. Constable, Bute Estate Office, Rothesay; Mr Phipps O. Turnbull, Bowmont, Dunbar; Mr James Durno, Crichie, Inverurie; Mr Andrew Pollock (A. & W. Pollock), Mauchline; Mr William Meiklem, Bennochy Park, Kirkcaldy; The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick; The Hon. T. G. P. Corbett, Rowallan, Kilmarnock; Mr George Grant, Glenfarclas, Blacksboat; Mr John W. Prentice, Craigrie Farm, Clackmannan.

Show District.—Major A. D. Campbell, Stanstill, Wick; Commander Harry Dunbar Dunbar-Rivers, Littlehaugh, Glen of Rothes, Rothes; Provost of Inverness; Captain John MacGillivray of Calrossie, Nigg, Ross-shire; Mr Duncan Alexander MacLennan, Balmachree, Inverness; Mr Ralph S. M'William, Garguston, Muir of Ord; Mr Walter Mundell, Dalchork, Lairg; Lieut.-Colonel Montagu J. Grant Peterkin of Grange, Grange Hall, Forres; Mr James Scott, Fearn, Ross-shire; Mr Charles F. Tulloch, Braevail, Lethen, Nairn.

Treasurer.—Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem.

Honorary Secretary.—Colonel F. J. Carruthers of Dormont, Lockerbie.

Presentation of Edinburgh Corporation Cup.

Lord Provost Sir T. B. Whitson, in presenting a gold cup from the Corporation of Edinburgh, said he had been asked by the Corporation of the City of Edinburgh to present to His Royal Highness, as President of the Highland and Agricultural Society, that gold cup, which they wished the Society to keep and present each year to the owner of the best tubercle-free milk cow in the Show. They desired to encourage the provision of good milk in order that the young generation might be a healthy one, and the Corporation had taken this means of killing two birds with one stone—showing their interest in the Society and helping the health of the community.

The Prince of Wales, in accepting the cup on behalf of the Society, said :—

My Lord Provost,—As President of the Society I would like to thank you very much for the kind thought you and the Corporation have had in presenting us with this cup, which will not only commemorate the Hundredth Anniversary Show, but will also be a great incentive and encouragement to those who are trying to keep a high-grade milk going in this country. Thank you very much indeed. I will now call on Lord Stair.

Vote of Thanks to H.R.H. The Prince of Wales.

The Earl of Stair said it fell to him to have the great honour of trying to express, on behalf of the Society, its thanks to the Prince of Wales for the great honour he had conferred upon it, and indeed upon the whole of Scotland, in accepting the office of President on the occasion of this extremely important Anniversary Show. He had also to thank His Royal Highness for having, in the midst of all his numerous and arduous engagements, travelled all that distance to preside at that meeting, and for, what he thought His Royal Highness would be obliged to recognise, the drawing of such an enormous crowd to the Show as he trusted it had never seen before. Their President's action on this occasion was more than fortunate, as had been mentioned on various occasions, in that the Show was almost bound to be ruined, but for the Prince's coming, by the disaster that overtook them last week. He was afraid all the oratory at the disposal of the Society had been already exhausted, along with most of the oxygen in that tent, and he simply asked the meeting to give to His Royal Highness the most cordial vote of thanks ever given to anybody at the General Meeting.

The members rose and applauded with great heartiness.

The Prince of Wales, in reply, said :—

My Lord Stair,—I thank you very much for the kind way you have proposed this vote of thanks, and you, ladies and gentlemen, for the way you have received it. I cannot flatter myself to think that I have drawn as many people here as the cattle would. I shall be, at the same time, highly delighted if I have in any way been able to help the Show this year. It has been a great pleasure to preside, and I sincerely hope, in offering my sympathy to those who have taken all the trouble in getting their cattle in shape for the Show and who have been disappointed, that it will not materially or very greatly affect the success of the Show, which I hope has many very successful years ahead of it.

ANNIVERSARY GENERAL MEETING, 6th January 1932.

Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer of the Society, in the Chair.

New Members.

One hundred and thirty-one candidates for election were balloted for and admitted members of the Society.

The Secretary said that the membership of the Society at the end of 1931 stood at 9790. A year ago the figure was 9837. During the year 399 new members had been elected, while 466 were lost through death or resignation. The loss on the year, therefore, was 47, which he thought was not unsatisfactory considering the depressed state of agriculture.

Finance.

Sir Ralph Anstruther of Balcaskie, Bart., Treasurer of the Society, submitted the Accounts of the Society for the year to 30th November 1931. The receipts for the year from all sources reached a total of £30,770, 13s. 3d., and the payments amounted to £29,557, 8s. 9d. Annual subscriptions amounted to £2475, 16s. 6d., and life subscriptions to £933, 9s. In the past year the expenditure on educational work amounted to £219, 5s. 6d.; on the work in the chemical and veterinary departments, £494, 13s. 1d.; on Warble Fly investigation, £294, 0s. 11d.; on the Society's 'Transactions,' £1975, 13s. 4d.; premiums and medals for local shows and district competitions, £704, 3s. 9d.; and certificates and medals for long service, £114, 12s. 6d. £753, 3s. was given in special grants, including £510 to the Animal Diseases Research Association, which sum included £310 to complete the equipment of a Bio-Chemical Department; £100 to Glasgow Veterinary College; and £100 to the Scottish Agricultural Organisation Society.

He moved approval of the following special grants: £100 for the current year to the Scottish Agricultural Organisation Society, and £10 to the Scottish Society for the Prevention of Cruelty to Animals.

Mr James R. Lumsden of Arden, Dumbartonshire, seconded, and the Accounts and Special Grants were approved.

Argyll Naval Fund.

Mr James M'Laren, Cornton, Bridge of Allan, submitted the report on the Argyll Naval Fund for 1930-31, which showed that the income for the year amounted to £331, 13s. 6d., while the expenditure was £320, 6s. 6d., comprising grants of £40 each to eight naval cadets and 6s. 6d. for printing expenses.

Hundredth Show, Edinburgh, 1931.

Mr Robert Park, Brunstane, Portobello, reported on the Society's One Hundredth Show, held at Edinburgh on Tuesday, 23rd June, and three following days. For substance of the Report, see page 263 of this volume.

Mr J. Milne Henderson said he thought the meeting should not just accept the report so coolly. They could not express their thanks too keenly to Mr Park and the Secretary for making such satisfactory arrangements under such disadvantageous circumstances. The Edinburgh members of the Society should be satisfied with the credit balance on the Accounts. He moved a special vote of thanks to Mr Park, the Secretary, and all the other Directors who had taken part in the work of the Show, and this was unanimously accorded.

Inverness Show, 1932.

Mr Alexander Munro of Leanach, Convener of the Shows Committee, reported that arrangements were well advanced for the 101st Show to be held that year at Inverness. The date of the Show had been fixed for 21st to 24th June inclusive.

An excellent site had been provided for the Show by the town of Inverness at The Bughts. This site was ample in extent, beautifully situated between Tomnahurich and the river Ness, and within a mile of the centre of the town. The Town Council had also granted a free supply of water, and had expressed their willingness to co-operate in every way to further the success of the Show.

The Prize List, which would be issued in February, was on the usual liberal scale. A sum of over £3800 was being offered in prizes from the Society's own funds. That compared with £3300 in 1923. In addition there was being offered the Prince of Wales Gold and Silver Championship Medals for Cattle, Sheep, Goats and Pigs, which were not awarded in 1931, to the approximate value of £230, besides a very large number of valuable Challenge Cups, Medals and Special Prizes.

In view of the increased accessibility of the capital of the Highlands through the reconstruction of the Great North and other roads, the Directors were hopeful that the Show, if favoured with good weather, would attract a larger attendance of visitors and attain a greater measure of success than any previous Show at the same centre.

Dundee Show, 1933.

Mr Archibald Whyte, Spott, Kirriemuir, Vice-Convener of the Shows Committee, reported that arrangements were proceeding for the Show to be held at Dundee in 1933. A Committee of the Society had recently again inspected the site for the

Show. The Committee had gone over the ground carefully, and found that the Town Council were making excellent progress with the improvement of the site. They were of opinion that exhibitors, members and the general public would be thoroughly satisfied with it.

Show of 1934.

Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, Chairman of Directors, moved the following resolution, which had that day been adopted by the Board of Directors: "That provided a suitable site is available, and satisfactory financial and other arrangements can be made, the Society's Show of 1934 be held in the Glasgow Show Division."

Mr Murdoch said it was right that he should explain that this did not necessarily mean that the Show should be held in Glasgow. The Glasgow Show Division comprised the counties of Argyll, Ayr, Bute, Lanark and Renfrew. The last Show in that Division was held in the city of Glasgow in 1925, and was one of the most successful Shows that the Society had ever held. Speaking personally, he hoped the Show would again be held in Glasgow. In saying that he did not mean anything derogatory to the other parts of the Show Division. The year 1934 would be the 150th anniversary of the formation of the Society, and if times were more prosperous then it might be an occasion to make a special effort to have a Show out of the ordinary, especially in view of the fact that the Hundredth Show at Edinburgh last year was robbed of a great deal of its success owing to the unfortunate outbreak of foot-and-mouth disease.

Mr James Kilpatrick, Craigie Mains, Kilmarnock, seconded, and the motion was unanimously adopted.

Warble Fly Investigation.

Colonel F. J. Carruthers drew attention to the Report by Dr R. Stewart MacDougall, Consulting Entomologist to the Society, on the Warble Fly experiments carried out during the spring and early summer of 1931. Copies of the Report had been circulated to all members of the Society along with the notice calling that Meeting.

Colonel Carruthers stated that the total cost of the experiments in the past year amounted to about £486. Of that sum the Report alone cost £160, so they would see that the actual cost of carrying out the experiments and demonstrations had been kept down to the lowest possible sum. That was due to the work having been done entirely by voluntary workers. No salaries were incurred, and the thanks of the Society were due to all those who so kindly placed their services at their disposal. The Report, he said, was a valuable one, and no one who read it could plead ignorance either of the damage done by the Warble Fly or of the means of combating it.

Dr R. Stewart MacDougall, in speaking to the Report, said there had been experiments or demonstrations over nearly the whole of Scotland. The work had been encouraging, not only because of its greater extent, but because of a greatly increased interest shown by farmers in the proceedings. They knew that the butcher and the leather merchant were already converted. It was to the farmer they had to try to bring home the fact that if he could get rid of the Warble Fly it would be better not only for the butcher and the leather merchant, but more profitable for the farmer himself. He was collecting, as far as he could, trustworthy information, and invited members interested in stock to send statements as to the extent to which animals being fed for the Fat Stock Market were affected by a small number of warbles, say, up to fifteen. No one could dispute that when a larger number was present there was a certain falling off in the health of the animal.

After some questions had been asked and answered, Dr Stewart MacDougall was, on the motion of the Chairman, accorded a hearty vote of thanks for his Report.

The Musk Rat.

Dr Stewart MacDougall also referred to the presence of the Musk Rat in this country, and exhibited a stuffed specimen. He said the Musk Rat was now being bred in this country for fur-producing purposes, and pointed out that there was a possibility of the animal becoming a serious pest. In Canada, where there were great waste areas of pond and marsh, the multiplying Musk Rat did no harm. It was a different matter if it were introduced into a crowded country like Scotland, where there were no such waste areas, and especially when the creature had such powers of multiplication, and was a courageous and hardy animal. Besides, it was nocturnal in its habits, and could burrow through railway embankments and under roads. They had to wire in very carefully any breeding pairs that were being kept for experimental purposes. The pelt was quite valuable, and those who in England and Scotland to-day had started musquash breeding farms were engaged in what would probably be a profitable business. Therefore, he was unwilling to say anything which would seem to interfere with their prosperity, but the Musk Rat must be properly ringed in. It belonged to the vole rather than the rat tribe, and by its strong front teeth could nip through ordinary wire mesh. A special mesh was needed to keep the creatures in.

Grants to Local Societies.

Captain John MacGillivray of Calrossie, Nigg, Ross-shire, submitted the report on District Shows and Competitions, showing that in 1931 grants of money and medals had been given in 77 districts. The total expenditure under this head amounted to £754, 0s. 9d. For the current year the Directors proposed the following grants: 28 districts for grants of £12 each for cattle, horses and sheep, and 15 districts in intermediate years, with a grant of three silver medals to each; payment of grants unawarded in 1931 owing to foot-and-mouth disease restrictions, £40, 2s. 6d.; 13 districts for grants of £15 each for stallions; 2 districts for grants of £3 each; special grants of £10 each to 14 Federations of Scottish Women's Rural Institutes; £20 to Kilmarnock Cheese Show; £20 to Northern Arts and Crafts Society; a gold medal and silver medal to the British Dairymaids' Association; three silver medals for Sir John Fleming Cup Stackyard Competition; 5 districts for two medals each; £8 and eight silver medals to the Scottish National Union of Allotment Holders; 1 district for grant of £3 for cottages and gardens; 1 district for silver medal for cottages, gardens, or garden produce, &c.; long service certificates and medals, say £157, 5s., and the usual medals for ploughing and hoeing competitions, say £127, 8s. 9d., making the total sum offered in 1932 £1116, 7s. 9d.

Education.

Colonel F. J. Carruthers of Dormont, Lockerbie, Convener of the Education Committee, reported on the results of the thirty-sixth Examination held during September last for the National Diploma in Dairying. At the Examination in England there were 52 candidates, of whom 26 obtained the Diploma and 26 failed; at the Examination at Auchincruive, Ayr, there were 46 candidates, 19 obtaining the Diploma and 27 failing. Only one Diploma with Honours was awarded, and that was obtained by a candidate at the English Centre. Of those candidates who failed, 11 at Reading and 16 at Auchincruive failed in not more than two subjects, and these would be permitted to reappear for the subjects in which they failed at the corresponding Examinations next year. The names of the successful candidates, as well as the names of the winners of the National Diploma in Agriculture at the Examination held last April, would be published in the next volume of 'Transactions.'

The Examinations for these Diplomas would again be held during the current year.

The Society's Examination for first and second-class certificates in Forestry would be held on 8th, 9th and 10th March next, provided a sufficient number of candidates presented themselves for examination.

Science.

(a) *Eradication of Bovine Tuberculosis.*

Mr Alexander Murdoch, Chairman of Directors, reported that during 1931 the Directors had under consideration a scheme for the eradication of bovine tuberculosis prepared by the Scottish Branch of the National Veterinary Medical Association. The matter was remitted to the Science Committee, which Committee met with representatives of the Scottish Branch of the National Veterinary Medical Association and of the Ayrshire Cattle Herd Book Society on 4th March, and thereafter gave the scheme full and prolonged consideration. The findings of the Committee were embodied in a report which was submitted to and adopted by the Directors at a Meeting on 4th November.

Briefly the report expressed disapproval of the scheme being made compulsory by legislation. They considered it would be an undue interference with the rights of owners of cattle to compel them to submit their cattle to a tuberculin test in which they might have no confidence, applied by a surgeon not selected by themselves. They regarded the scheme as entirely unsuited to any herds of cattle which were not altogether, or nearly, maintained by breeding within the herd, and that it would be impossible to carry on the normal cattle trade of the country under regulations such as the scheme proposed.

On the other hand, they had much sympathy with certain of the proposals put forward by the representatives of the bodies mentioned and regarded favourably the carrying out, in suitable areas, of voluntary experiments on the lines of the scheme. At the same time, they desired to emphasise the value of the Tuberculosis Order of 1925, and expressed the opinion that that Order ought, if possible, to be enforced much more largely than it had been in the past.

(b) *Report by Chemist.*

Dr J. F. Tocher, Consulting Chemist to the Society, reported on the work of the Department during the past six months.

The substance of Dr Tocher's report appears on pp. 195-200 of this volume.

Vote of Thanks.

On the motion of Mr Alexander Murdoch, a vote of thanks was accorded to Sir Ralph Anstruther, Bart., for presiding.

APPENDIX

PREMIUM BOOK

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

1932

CONTENTS.

PAGE

General Notice 3
Constitution and Management 3
Privileges of Membership 4
Membership 5
Officers and Directors for 1931-1932 6
Committees for 1931-1932 8
Representatives on Other Bodies 13
Meetings 14
General Show 14
Dates of Examinations 15
National Diploma in Agriculture (N.D.A.) 16
National Diploma in Dairying (N.D.D.) 26
Certificates in Forestry 35
Veterinary Certificates and Medals 45
Chemical Department 46
Botanical Department 58
Entomological Department 60

PREMIUMS OFFERED.

GROUP I.—REPORTS.

General Regulations 61

1. The Science and Practice of Agriculture—For Approved Reports on—
    1. Rural Economy abroad, susceptible of being introduced into Scotland 62
    2. Other suitable subjects 62
2. Estate Improvements—For Approved Reports on—
    1. General Improvement of Estates by Proprietors . . 62
    2, 3, 4, 5, and 6. Reclamation of Waste Land and Improvement of Natural Pasture by Proprietors or Tenants . . 62-63

Premiums Offered (*continued*)—

3. Highland Industries—For Approved Reports on—
    1. Best mode of treating Native Wool, &c. 63
4. Machinery—For Approved Reports 64
5. Forestry—For Approved Reports on—
    1. Planting on deep Peat-bog 64

GROUP II.—DISTRICT GRANTS.

Applications 64
1. Grants to Local Societies for Horses, Cattle, Sheep, and Pigs 64
2. Grants to Horse Associations engaging Stallions . . 71
3. Medals in aid of Premiums given by Local Societies . . 74
4. Special Grants 76
5. Grants to Scottish Women's Rural Institutes . . 78

GROUP III.—COTTAGES AND GARDENS, &c.

1. Premiums for Best Kept Cottages and Gardens . . 79
2. Medals for Best Kept Cottages and Gardens, Garden Produce, Poultry, and Bee-Keeping . . . 80

GROUP IV.—PLOUGHING, HOEING, AND LONG SERVICE.

1. Medals for Ploughing Competitions 81
2. Medals for Hoeing Competitions 82
3. Certificates and Medals for Long Service . . . 83

GENERAL SHOW.

Annual Show at Inverness in 1932—Prize List, Regulations, &c. 85

IMPLEMENTS.

£1000 Premium for New Implement or Machine . . . 152

GENERAL NOTICE.

THE HIGHLAND SOCIETY was instituted in the year 1784, and incorporated by Royal Charter in 1787. Its operation was at first limited to matters connected with the improvement of the Highlands of Scotland; but the supervision of certain departments, proper to that part of the country, having been subsequently committed to special Boards of Management, several of the earlier objects contemplated by the Society were abandoned, while the progress of agriculture led to the adoption of others of a more general character. The exertions of the Society were thus early extended to the whole of Scotland, and have since been continuously directed to the promotion of the science and practice of agriculture in all its branches.

In accordance with this more enlarged sphere of action, the original title of the Society was altered, under a Royal Charter, in 1834, to THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

Among the more important measures which have been effected by the Society are—

1. Agricultural Meetings and General Shows of Stock, Implements, &c., held in the principal towns of Scotland, at which exhibitors from all parts of the United Kingdom are allowed to compete.
2. A system of District Shows instituted for the purpose of improving the breeds of Stock most suitable for different parts of the country, and of aiding and directing the efforts of Local Agricultural Associations.
3. The encouragement of Agricultural Education, under powers conferred by a supplementary Royal Charter, granted in 1856, and authorising the Society to grant Diplomas to Students of Agriculture; and by giving grants in aid of education in Agriculture and allied sciences. In 1900 the Society discontinued its own Examination, and instituted jointly with the Royal Agricultural Society of England an Examination for a National Diploma in Agriculture.
4. The advancement of the Veterinary Art, by conferring Certificates on Students who have passed through a prescribed curriculum, and who are found, by public examination, qualified to practise. Terminated in 1881 in accordance with arrangements with the Royal College of Veterinary Surgeons.
5. The institution of a National Examination in Dairying, jointly with the Royal Agricultural Society of England and the British Dairy Farmers' Association.
6. The institution of an Examination in Forestry for First and Second Class Certificates.
7. The appointment of a Chemist for the purpose of promoting the application of science to agriculture.
8. The establishment of a Botanical Department.
9. The appointment of an Entomologist to advise members regarding insect pests.
10. The annual publication of the 'Transactions,' comprehending papers by selected writers, Prize Reports, and reports of experiments, also an abstract of the business at Board and General Meetings, and other communications.
11. The management of a fund left by John, 5th Duke of Argyll (the origina President of the Society), to assist young natives of the Highlands who enter His Majesty's Navy.

CONSTITUTION AND MANAGEMENT.

The general business of THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND is conducted under the sanction and control of the Royal Charters, referred to above, which authorise the enactment of Bye-Laws.

The Office-Bearers consist of a President, Four Vice-Presidents, Thirty-two Ordinary and Twenty Extraordinary Directors, a Treasurer, an Honorary and an Acting Secretary, an Auditor, and other Officers.

The Supplementary Charter of 1856 provides for the appointment of a Council on Education, consisting of Sixteen Members—Nine nominated by the Charter and Seven elected by the Society.

PRIVILEGES OF MEMBERSHIP

MEMBERS OF THE SOCIETY ARE ENTITLED—

1. *To receive a free copy of the 'Transactions' annually.*
2. *To apply for District Premiums that may be offered, and for Long Service Awards for Agricultural Employees.*
3. *To report Ploughing Matches for Medals that may be offered.*
4. *To Free Admission to the Shows of the Society.*
5. *To exhibit Live Stock and Implements at reduced rates.*

   Firms are not admitted as Members; but if one partner of a firm becomes a Member, the firm is allowed to exhibit at Members' rates.
6. *To have Manures and Feeding-Stuffs analysed at reduced fees.*
7. *To have Seeds tested at reduced fees.*
8. *To have Insect Pests and Diseases affecting Farm Crops inquired into.*
9. *To attend and vote at General Meetings of the Society.*
10. *To vote for the Election of Directors,*

    &c., &c.

ANALYSIS OF MANURES AND FEEDING-STUFFS

The Fees of the Society's Chemist for Analyses made for Members of the Society shall, until further notice, be as follows:—

The determination of *one* ingredient in a single sample of manure or of a feeding-stuff	5s.
The determination of *two or more* ingredients in a single sample of manure or of a feeding-stuff	10s.

These charges apply only to analyses made for agricultural purposes for the sole and private use of Members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed. The charges do not apply to Members whose Subscriptions are in arrears.

If the sample represents a substance bought under a guarantee, and if it is found to be notably deficient, the Society will communicate with the vendor and endeavour to obtain compensation for the buyer.

The Society's Chemist also supplies valuations of manures, according to the Society's scale of units, in cases in which the cash price asked by the seller accompanies the sample.

Chemist.—Mr J. F. TOCHER, D.Sc., F.I.C , Crown Mansions, 41½ Union Street, Aberdeen.

For further particulars, see under Chemical Department.

REPORTS ON THE ANIMAL ENEMIES OF CROP PLANTS AND LIVE STOCK (INCLUDING POULTRY)

The Consulting Entomologist is prepared to send a Report to any Member of the Society on damage or diseases of plants and animals due to animal agency (Insects, Mites, Worms, Snails, Slugs, Birds, and the Smaller Mammals). The charge for examination and report has been fixed at 1s.

Entomologist.—Mr R. STEWART MACDOUGALL, M.A., D.Sc., Ivy Lodge, Gullane.

For further particulars, see under Entomological Department.

SEEDS, CROP DISEASES, INSECT PESTS, &c.

The rates of charges for the examination of plants and seeds, reports on crop diseases, insect pests, &c., may be had on application to the Secretary.

MEMBERSHIP

ELECTION OF MEMBERS

Candidates for admission to the Society must be proposed by a Member, and are elected at the half-yearly General Meetings in January and June. It is not necessary that the proposer should attend the Meeting.

CONDITIONS OF MEMBERSHIP

Higher Subscription.—The ordinary annual subscription is £1, 3s. 6d., and the ordinary subscription for life-membership is £12 12s.; or after ten annual payments have been made, £7, 7s.

Lower Subscription.—Proprietors farming the whole of their own lands, whose rental on the Valuation Roll does not exceed £500 per annum, and all Tenant-Farmers, Secretaries or Treasurers of Local Agricultural Associations, Factors resident on Estates, Land Stewards, Foresters, Agricultural Implement Makers, and Veterinary Surgeons, none of them being also owners of land to an extent exceeding £500 per annum, and such other persons as, in respect of their official or other connection with Agriculture, the Board of Directors may consider eligible, are admitted on a subscription of 10s. annually, which may be redeemed by one payment of £7, 7s., and after eight annual payments of 10s. have been made, a Life Subscription may be purchased for £5, 5s., and after twelve such payments, for £3, 3s.

> *Candidates claiming to be on the Lower Rate of Subscription,* 10*s.*, *must state under which of the above designations they are entitled to be placed.*

Subscriptions are payable on election, and afterwards annually in January.

According to the Charter, a Member who shall not have objected to his election, on the same being intimated to him by the Secretary, cannot retire until he has paid, in annual subscriptions or otherwise, an amount equivalent to a life composition.

Members are requested to send to the Secretary the names and addresses of Candidates they have to propose (stating whether the Candidates should be on the £1, 3s. 6d. or 10s. list).

JOHN STIRTON, *Secretary.*

8 Eglinton Crescent, Edinburgh.

Patron of the Society—HIS MAJESTY THE KING.

OFFICERS AND DIRECTORS FOR 1931-1932.

President.

The Duke of Portland, K.G., P.C., G.C.V.O., Langwell, Berriedale, Caithness.

Vice-Presidents.

The Duke of Sutherland, K.T., Dunrobin Castle, Golspie.
Sir Hector Munro of Foulis, Bart., C.B., Foulis' Castle, Evanton, Ross-shire.
Sir Archibald H. M. Sinclair of Ulbster, Bart., P.C., C.M.G., M.P., Thurso Castle, Thurso.
The Hon. Evan Baillie of Dochfour, Inverness.

Year of Election.

Ordinary Directors.

1928
John Robson, jun., Lynegar, Watten, Caithness.
Archibald Whyte, Spott, Kirriemuir.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire.
Thomas Templeton, Sandyknowe, Kelso.
Robert Park, Brunstane, Portobello.
Colonel Robert W. Walker, Culter House, Milltimber, Aberdeenshire.
James R. Lumsden of Arden, Dumbartonshire.
John Bryce Duncan, Newlands, Dumfries (elected 5th June 1929).

1929
....
A. A. Hagart Speirs of Elderslie, Houston House, Houston.
Major Robert W. Sharpe of The Park, Earlston.
Thomas Elder of Stevenson, Haddington.
John P. Sleigh of St John's Wells, Fyvie.
T. Mercer Sharp, Bardrill, Blackford.
George Will, Acrehead, Dumfries.
James P. Brown, Dipple, Fochabers.

1930
James Kilpatrick, Craigie Mains, Kilmarnock.
J. P. Ross-Taylor, Mungoswalls, Duns.
Robert Miller, Ferrygate, North Berwick.
Falconer L. Wallace of Candacraig, Strathdon.
J. E. Kerr of Harviestoun, Dollar.
Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
Charley Tinker, Kilmartin, Inverness.
John M. Roger, Balgove, St Andrews.

1931
Major S. Strang Steel of Philiphaugh, Selkirk.
John E. B. Cowper, Gogar House, Corstorphine, Midlothian.
Alexander Forbes, Rettie, Banff.
James M'Laren, Cornton, Bridge of Allan.
John Hewetson, Baltersan, Newton-Stewart.
Ian M. Campbell, Balblair, Invershin.
Alexander Clark, Strathore House, Thornton, Fife.
Captain John C. Stewart of Murdostoun, Newmains.

Year of Election.

Extraordinary Directors.

1930 ALEXANDER MUNRO of Leanach, Culloden Moor, Inverness.
NORMAN H. CONSTABLE, Bute Estate Office, Rothesay.
PHIPPS O. TURNBULL, Bowmont, Dunbar.
JAMES DURNO, Crichie, Inverurie.

1931 ANDREW POLLOCK (A. & W. Pollock), Mauchline.
WILLIAM MEIKLEM, Bennochy Park, Kirkcaldy.
The Hon. WALTER T. H. SCOTT, Master of Polwarth, Harden, Hawick.
The Hon. T. G. P. CORBETT, Rowallan, Kilmarnock.
GEORGE GRANT, Glenfarclas, Blacksboat.
JOHN W. PRENTICE, Craigrie Farm, Clackmannan.

Show Divisional Directors.

1931 Major A. D. CAMPBELL, Stanstill, Wick.
Commander H. DUNBAR DUNBAR-RIVERS, Littlehaugh, Glen of Rothes, Rothes.
Lieut.-Colonel MONTAGU J. GRANT-PETERKIN of Grange, Grange Hall, Forres.
Provost DONALD MACDONALD, Town House, Inverness.
Captain JOHN MACGILLIVRAY of Calrossie, Nigg, Ross-shire.
DUNCAN A. MACLENNAN, Balmachree, Inverness.
RALPH S. M'WILLIAM, Gargustou, Muir of Ord.
WALTER MUNDELL, Dalchork, Lairg.
JAMES SCOTT, Fearn, Ross-shire.
CHARLES F. TULLOCH, Braevail, Lethen, Nairn.

Chief Officials.

Sir RALPH ANSTRUTHER of Balcaskie, Bart., Pittenweem, *Treasurer.*
Colonel F. J. CARRUTHERS of Dormont, Lockerbie, *Honorary Secretary.*
JOHN STIRTON, *Secretary.*
J. G. YARDLEY, *Chief Clerk.*
JOHN WATT, *Second Clerk.*
GEORGE JAMES GREGOR, C.A., 8 York Place, *Auditor.*
J. F. TOCHER, D.Sc., F.I.C., 41½ Union Street, Aberdeen, *Chemist*
Professor R. STANFIELD, A.R.S.M., M.Inst.C.E., F.R.S.E., 24 Mayfield Gardens, *Consulting Engineer.*
R. STEWART MACDOUGALL, M.A., D.Sc., Ivy Lodge, Gullane, *Consulting Entomologist.*
The Very Rev. CHARLES L. WARR, D.D., 63 Northumberland Street, *Chaplain.*
TODS, MURRAY, & JAMIESON, W.S., 66 Queen Street, *Law Agents.*
WILLIAM BLACKWOOD & SONS LTD., 45 George Street, *Publishers.*
HENRY MUNRO, LTD., 82 Mitchell Street, Glasgow, *Advertising Agents.*
HAMILTON & INCHES, Princes Street, *Silversmiths.*
ALEXANDER KIRKWOOD & SON, 9 St James' Square, *Medallists.*
JOHN REID, 55 Blenheim Place, Aberdeen, *Showyard Erector.*
J. P. LAUDER, *Officer and Caretaker.*

Chairman of Board of Directors.

ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire.

Chairmen of Committee.

1.	*Argyll Naval Fund*	MACLACHLAN OF MACLACHLAN, Castle Lachlan, Strachur.
2.	*Finance, Chambers, and Law*	Sir RALPH ANSTRUTHER of Balcaskie, Bart., Pittenweem.
3.	*Publications*	Colonel F. J. CARRUTHERS of Dormont, Lockerbie.
4.	*Shows*	ALEXANDER MUNRO of Leanach, Culloden Moor, Inverness.
5.	*Implements and Machinery*	PHIPPS O. TURNBULL, Bowmont, Dunbar.
6.	*Science*	Major ROBERT W. SHARPE of The Park, Earlston.
7.	*General Purposes*	ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire.
8.	*Education*	Colonel F. J. CARRUTHERS of Dormont, Lockerbie.
9.	*Forestry*	Sir HUGH SHAW-STEWART, Bart., C.B., Ardgowan, Inverkip.
10.	*Office-Bearers*	ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire.

COMMITTEES FOR 1931-1932

1. ARGYLL NAVAL FUND.

MACLACHLAN OF MACLACHLAN, Castle Lachlan, Strachur, *Convener.*
The EARL OF ELGIN AND KINCARDINE, C.M.G., Broomhall, Dunfermline.
Colonel Sir JOHN GILMOUR, Bart., D.S.O., M.P., of Montrave, Leven.
J. E. KERR of Harviestoun, Dollar.
JAMES M'LAREN, Cornton, Bridge of Allan.
Sir HUGH SHAW-STEWART, Bart., C.B., Ardgowan, Inverkip.
CHARLEY TINKER, Kilmartin, Inverness.
ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire, Chairman, *ex officio.*
Sir RALPH ANSTRUTHER of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio.*
Colonel F. J. CARRUTHERS of Dormont, Lockerbie, Honorary Secretary, *ex officio.*

2. FINANCE, CHAMBERS, AND LAW.

Sir RALPH ANSTRUTHER of Balcaskie, Bart., Pittenweem, Treasurer, *Convener.*
JOHN BRYCE DUNCAN, Newlands, Dumfries.
JAMES DURNO, Crichie, Inverurie.
WILLIAM C. HUNTER of Arngask, Glenfarg.
J. E. KERR of Harviestoun, Dollar.
JAMES R. LUMSDEN of Arden, Dumbartonshire.
JAMES M'LAREN, Cornton, Bridge of Allan.
ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive.
ALEXANDER MUNRO of Leanach, Culloden Moor, Inverness.
ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire.
J. P. ROSS-TAYLOR, Mungoswalls, Duns.
PHIPPS O. TURNBULL, Bowmont, Dunbar.
FALCONER L. WALLACE of Candacraig, Strathdon.
Colonel F. J. CARRUTHERS of Dormont, Lockerbie, Honorary Secretary, *ex officio.*
GEORGE JAMES GREGOR, C.A., Auditor, *ex officio.*

3. PUBLICATIONS.

Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *Convener.*
James P. Brown, Dipple, Fochabers.
Norman H. Constable, Bute Estate Office, Rothesay.
John E. B. Cowper, Gogar House, Corstorphine.
James Durno, Crichie, Inverurie.
Alexander Forbes, Rettie, Banff.
George Grant, Glenfarclas, Blacksboat.
J. E. Kerr of Harviestoun, Dollar.
James Kilpatrick, Craigie Mains, Kilmarnock.
James R. Lumsden of Arden, Dumbartonshire.
James M'Laren, Cornton, Bridge of Allan.
Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire.
John Robson, jun., Lynegar, Watten, Caithness.
J. P. Ross-Taylor, Mungoswalls, Duns.
The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
Falconer L. Wallace of Candacraig, Strathdon.
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio.*

4. SHOWS.

Alexander Munro of Leanach, Culloden Moor, Inverness, *Convener.*
Archibald Whyte, Spott, Kirriemuir, *Vice-Convener.*
James P. Brown, Dipple, Fochabers.
Major A. D. Campbell, Stanstill, Wick.
Ian M. Campbell, Balblair, Invershin.
Alexander Clark, Strathore House, Thornton, Fife.
Norman H. Constable, Bute Estate Office, Rothesay.
The Hon. T. G. P. Corbett, Rowallan, Kilmarnock.
John E. B. Cowper, Gogar House, Corstorphine.
Commander H. Dunbar Dunbar-Rivers, Littlehaugh, Glen of Rothes, Rothes.
John Bryce Duncan, Newlands, Dumfries.
James Durno, Crichie, Inverurie.
Thomas Elder of Stevenson, Haddington.
Alexander Forbes, Rettie, Banff.
George Grant, Glenfarclas, Blacksboat.
Lieut.-Colonel Montagu J. Grant-Peterkin of Grange, Grange Hall, Forres.
John Hewetson, Baltersan, Newton-Stewart.
J. E. Kerr of Harviestoun, Dollar.
James Kilpatrick, Craigie Mains, Kilmarnock.
James R. Lumsden of Arden, Dumbartonshire.
Provost Donald Macdonald, Town House, Inverness.
Captain John MacGillivray of Calrossie, Nigg, Ross-shire.
James M'Laren, Cornton, Bridge of Allan.
Duncan A. MacLennan, Balmachree, Inverness.
Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
Ralph S. M'William, Garguston, Muir of Ord.
William Meiklem, Bennochy Park, Kirkcaldy.
Robert Miller, Ferrygate, North Berwick.
Walter Mundell, Dalchork, Lairg.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire.
Robert Park, Brunstane, Portobello.
Andrew Pollock (A. & W. Pollock), Mauchline.
John W. Prentice, Craigrie Farm, Clackmannan.
John Robson, jun., Lynegar, Watten, Caithness.

John M. Roger, Balgove, St Andrews.
J. P. Ross-Taylor, Mungoswalls, Duns.

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James Scott, Fearn, Ross-shire.
The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
T. Mercer Sharp, Bardrill, Blackford.
Major Robert W. Sharpe of The Park, Earlston.
John P. Sleigh of St John's Wells, Fyvie.
A. A. Hagart Speirs of Elderslie, Houston House, Houston.
Major S. Strang Steel of Philiphaugh, Selkirk.
Captain John C. Stewart of Murdostoun, Newmains.
Thomas Templeton, Sandyknowe, Kelso.
Charley Tinker, Kilmartin, Inverness.
Charles F. Tulloch, Braevail, Lethen, Nairn.
Phipps O. Turnbull, Bowmont, Dunbar.
Colonel Robert W. Walker, Culter Lodge, Milltimber, Aberdeenshire.
Falconer L. Wallace of Candacraig, Strathdon.
George Will, Acrehead, Dumfries.
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio.*
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio.*
Professor R. Stanfield, A.R.S.M., &c., 24 Mayfield Gardens, Edinburgh, Engineer, *ex officio.*

5. IMPLEMENTS AND MACHINERY.

Phipps O. Turnbull, Bowmont, Dunbar, *Convener.*
J. P. Ross-Taylor, Mungoswalls, Duns, *Vice-Convener.*
James P. Brown, Dipple, Fochabers.
Alexander Clark, Strathore House, Thornton, Fife.
Norman H. Constable, Bute Estate Office, Rothesay.
John E. B. Cowper, Gogar House, Corstorphine.
Thomas Elder of Stevenson, Haddington.
Alexander Forbes, Rettie, Banff.
John Hewetson, Baltersan, Newton-Stewart.
J. E. Kerr of Harviestoun, Dollar.
James M'Laren, Cornton, Bridge of Allan.
William Meiklem, Bennochy Park, Kirkcaldy.
Robert Miller, Ferrygate, North Berwick.
Walter Mundell, Dalchork, Lairg.
Alexander Munro of Leanach, Culloden Moor, Inverness.
Robert Park, Brunstane, Portobello.
Andrew Pollock (A. & W. Pollock), Mauchline.
John W. Prentice, Craigrie Farm, Clackmannan.
John Robson, jun., Lynegar, Watten, Caithness.
The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
Major Robert W. Sharpe of The Park, Earlston.
John P. Sleigh of St John's Wells, Fyvie.
Charley Tinker, Kilmartin, Inverness.
Colonel Robert W. Walker, Culter House, Milltimber, Aberdeenshire.
George Will, Acrehead, Dumfries.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire, Chairman, *ex officio.*
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio.*
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio.*
Professor R. Stanfield, A.R.S.M., &c., 24 Mayfield Gardens, Edinburgh, Engineer, *ex officio.*

6. SCIENCE.

Major Robert W. Sharpe of The Park, Earlston, *Convener.*
The Hon. T. G. P. Corbett, Rowallan, Kilmarnock, *Vice-Convener.*
Ian M. Campbell, Balblair, Invershin.
John E. B. Cowper, Gogar House, Corstorphine.
John Bryce Duncan, Newlands, Dumfries.
James Durno, Crichie, Inverurie.
Alexander Forbes, Rettie, Banff.
J. E. Kerr of Harviestoun, Dollar.
James R. Lumsden of Arden, Dumbartonshire.
James M'Laren, Cornton, Bridge of Allan.
Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
Alexander Munro of Leanach, Culloden Moor, Inverness.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire.
J. P. Ross-Taylor, Mungoswalls, Duns.

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The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
A. A. Hagart Speirs of Elderslie, Houston House, Houston.
Major S. Strang Steel of Philiphaugh, Selkirk.
Captain John C. Stewart of Murdostoun, Newmains.
Thomas Templeton, Sandyknowe, Kelso.
Phipps O. Turnbull, Bowmont, Dunbar.
Falconer L. Wallace of Candacraig, Strathdon.
Archibald Whyte, Spott, Kirriemuir.
George Will, Acrehead, Dumfries.
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio.*
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio.*
J. F. Tocher, D.Sc., F.I.C., 41½ Union Street, Aberdeen, Chemist, *ex officio.*
R. Stewart MacDougall, M.A., D.Sc., Ivy Lodge, Gullane, Entomologist, *ex officio.*

7. GENERAL PURPOSES.

Alexander Murdoch, East Hallside, Hallside, Lanarkshire, Chairman, *Convener.*
Alexander Clark, Strathore House, Thornton, Fife.
John E. B. Cowper, Gogar House, Corstorphine.
Thomas Elder of Stevenson, Haddington.
J. E. Kerr of Harviestoun, Dollar.
James M'Laren, Cornton, Bridge of Allan.
Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
William Meiklem, Bennochy Park, Kirkcaldy.
Robert Miller, Ferrygate, North Berwick.
Robert Park, Brunstane, Portobello.
The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
Major Robert W. Sharpe of The Park, Earlston.
Phipps O. Turnbull, Bowmont, Dunbar.
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio.*
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio.*

8. EDUCATION.

Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *Convener.*
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer.
J. E. Kerr of Harviestoun, Dollar.
James M'Laren, Cornton, Bridge of Allan.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire.
John Stirton, *Secretary*, Highland and Agricultural Society.

9. FORESTRY.

Sir Hugh Shaw-Stewart, Bart., C.B., Ardgowan, Inverkip, *Convener.*
The Duke of Atholl, K.T. G.C.V.O., C.B., D.S.O., M.V.O., Blair Castle, Blair Atholl.
Sir James Inglis Davidson, Saughton Mains, Corstorphine.
The Earl of Elgin and Kincardine, C.M.G., Broomhall, Dunfermline.
Walter Stewart Fothringham of Fothringham and Murthly, Murthly Castle, Perth.
Colonel Sir John Gilmour, Bart., D.S.O., M.P., of Montrave, Leven.
F. N. M. Gourlay, Kirkland, Tynron, Thornhill, Dumfriesshire.
The Earl of Home, K.T., Springhill, Coldstream.
J. H. Milne Home, Irvine House, Canonbie.
J. E. Kerr of Harviestoun, Dollar.
James R. Lumsden of Arden, Dumbartonshire.
A. D. Macdonald, Lennie Mains, Cramond Bridge.
Maclachlan of Maclachlan, Castle Lachlan, Strachur.
J. T. M'Laren, 7 Park Place, Stirling.
Sir Herbert E. Maxwell of Monreith, Bart., D.C.L., LL.D., F.R.S., Whauphill.
The Lord Polwarth, Humbie House, Humbie, East Lothian.
The Lord Scone, M.P., Scone Palace, Perth.
The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
A. A. Hagart Speirs of Elderslie, Houston House, Houston.
Major Mark Sprot of Riddell, Hawick.
The Earl of Stair, D.S.O., Lochinch, Castle-Kennedy.
Major S. Strang Steel of Philiphaugh, Selkirk.
Sir John Maxwell Stirling-Maxwell of Pollok, Bart., K.T., Pollok House, Pollokshaws.
Charley Tinker, Kilmartin, Inverness.
Falconer L. Wallace of Candacraig, Strathdon.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire, Chairman, *ex officio.*
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio.*
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio.*

10. OFFICE-BEARERS.

Constitution: (1) The four Ordinary Directors for the Division in which the Show for the year is to be held (with the exception of one retiring next year); (2) one Ordinary Director from each of the other Show Divisions; and (3) the Chairman of the Board, Treasurer, and Hon. Secretary, *ex officiis.*

Perth . .	....
	John M. Roger, Balgove, St Andrews.
	Alexander Clark, Strathore House, Thornton, Fife.
Glasgow .	James Kilpatrick, Craigie Mains, Kilmarnock.
Borders .	Major Robert W. Sharpe of The Park, Earlston.
Aberdeen .	John P. Sleigh of St John's Wells, Fyvie.
Stirling .	J. E. Kerr of Harviestoun, Dollar.
Dumfries .	Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
Edinburgh.	Thomas Elder of Stevenson, Haddington.

Inverness . Ian M. Campbell, Balblair, Invershin.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire, Chairman, *ex officio.*
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio.*
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio.*

REPRESENTATIVES ON OTHER BODIES.

National Agricultural Examination Board and National Dairy Examination Board.

Colonel F. J. Carruthers of Dormont, Lockerbie.
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem.
J. E. Kerr of Harviestoun, Dollar.
James M'Laren, Cornton, Bridge of Allan.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire.
John Stirton, *Secretary,* Highland and Agricultural Society.

Edinburgh and East of Scotland College of Agriculture.

John Stirton, *Secretary,* Highland and Agricultural Society.

West of Scotland Agricultural College.

Alexander Murdoch, East Hallside, Hallside, Lanarkshire.

Aberdeen and North of Scotland College of Agriculture.

J. F. Tocher, D.Sc., F.I.C., 41½ Union Street, Aberdeen.

Royal (Dick) Veterinary College.

Dr Thomas G. Nasmyth, Canaan Lodge, 43 Canaan Lane, Edinburgh.

Glasgow Veterinary College.

Alexander Murdoch, East Hallside, Hallside, Lanarkshire.

Scottish Milk Records Association.

W. P. Gilmour, Balmangan, Kirkcudbright.
Alexander Munro of Leanach, Culloden Moor, Inverness.
Alexander Murdoch, East Hallside, Hallside, Lanarkshire.

National Trust for Scotland.

Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem.

Association for the Preservation of Rural Scotland.

The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.

SCOTTISH PLANT REGISTRATION STATION.

Standing Committee of Management.

James Elder, Athelstaneford Mains, Drem. J. P. Ross-Taylor, Mungoswalls, Duns. G. Bertram Shields, Rosebery Farm, Gorebridge.	*Appointed for 5 years from 1st January* 1931.

MEETINGS.

General Meetings.—By the Charter the Society must hold two General Meetings each year, and, under ordinary circumstances, they are held in the months of January and June, for the election of Members and other business. Twenty a quorum.

By a resolution of the General Meeting on 15th January 1879, a General Meeting of Members is held in the Showyard on the occasion of the Annual Show. In 1932 it will be held at The Bughts, Inverness, on the Wednesday of the Show, at an hour to be announced in the Programme of the Show.

With reference to motions at General Meetings, Bye-Law No. 16 provides—"That at General Meetings of the Society no motion or proposal (except of mere form of courtesy) shall be submitted or entertained for immediate decision unless notice thereof has been given a week previously to the Board of Directors, without prejudice, however, to the competency of making such motion or proposal to the effect of its being remitted to the Directors for consideration, and thereafter being disposed of at a future General Meeting."

Directors' Meetings.—The Board of Directors meet (except when otherwise arranged) on the first Wednesday of each month from November till June inclusive, at 1.30 P.M., and occasionally as business may require, on a requisition by three Directors to the Secretary, or on intimation by him. Seven a quorum.

Committee Meetings.—Meetings of the various Committees are held as required.

Nomination of Directors.—Meetings of Members, for the purpose of nominating Directors to represent the Show Divisions on the Board for the year 1933-1934, will be held at the places and on the days after mentioned:—

1. *Edinburgh.*	Market Buildings, Gorgie, Edinburgh	Wed., 25th Jan. 1933, at 1.
2. *Glasgow.*	North British Station Hotel, Glasgow	Wed., 8th Feb. 1933, at 1.
3. *Stirling.*	Golden Lion Hotel, Stirling	Thur., 9th Feb. 1933, at 1.30.
4. *Perth.*	Salutation Hotel, Perth	Fri., 10th Feb. 1933, at 2.
	(The Meeting will be held in 1934 and 1935 at Cupar; in 1936 at Perth.)	
5. *Borders.*	Railway Hotel, St Boswells	Thur., 16th Feb. 1933, at 1.30.
6. *Inverness.*	Station Hotel, Inverness	Tues., 21st Feb. 1933, at 2.
7. *Aberdeen.*	Imperial Hotel, Aberdeen	Fri., 24th Feb. 1933, at 2.30.
8. *Dumfries.*	King's Arms Hotel, Dumfries	Wed., 8th Mar. 1933, at 2.15.

The nomination of a Proprietor or other Member paying the higher subscription must be made in the 1st, 2nd, 4th, and 5th Divisions; and the nomination of a Tenant-Farmer or other Member paying the lower subscription in the 3rd, 6th, 7th, and 8th Divisions.

Retiring Directors are not eligible for re-election until after the lapse of at least one year.

GENERAL SHOW.

The Annual Show will be held at The Bughts, Inverness, on 21st, 22nd, 23rd, and 24th June 1932. For closing dates for Entries, Premiums offered, &c., see 'Regulations and Prize List.'

EXAMINATIONS.

Agriculture. — The Examination for 1932 for the National Diploma in Agriculture will be held at the University, Leeds, on Thursday, 14th April 1932, and following days.

Dairying.—The Examination for 1932 for the National Diploma in Dairying will be held at the Dairy School, Auchincruive, Ayr: *Written*—On Thursday, Friday, and Saturday, 8th, 9th, and 10th September 1932; *Oral and Practical*—On Monday, 19th September 1932, and following days. Entries close on 2nd August.

Forestry. — The Examination for the Society's Certificates in Forestry will be held each year in the month of March at the Society's Chambers, 8 Eglinton Crescent, Edinburgh, provided a sufficient number of candidates present themselves for examination.

NATIONAL DIPLOMA IN AGRICULTURE

By a Supplementary Charter under the Great Seal, granted in 1856, the Society is empowered to grant Diplomas.

From 1858 to 1899 the Society held an annual Examination for Certificate and Diploma in Agriculture. In 1872 the Free Life Membership of the Society was granted to winners of the Diploma. In 1884 permission was given to holders of the Diploma to append the letters F.H.A.S. to their names.

In 1898 it was resolved by the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland to discontinue the independent Examinations in Agriculture held by the two Societies, and to institute in their stead a Joint-Examination for a NATIONAL DIPLOMA IN AGRICULTURE (N.D.A.) This Examination is now conducted under the management of "The National Agricultural Examination Board" appointed by the two Societies.

REGULATIONS FOR EXAMINATION IN THE SCIENCE AND PRACTICE OF AGRICULTURE

1. The above-mentioned Societies may hold conjointly, under the management of the National Agricultural Examination Board appointed by them, an Annual Examination in the Science and Practice of Agriculture, at a convenient centre.

2. Candidates who pass the Examination will receive the National Diploma in Agriculture—the Diploma to be distinguished shortly by the letters "N.D.A."

3. The Examination will be conducted by means of written papers and oral examinations.

4. In order to be eligible to sit for the Board's Examination in Agriculture, a candidate must—

(*a*) Present a certificate from a recognised Agricultural College that his attainments in the subjects of *General Botany, Geology, General Chemistry, Physics, and Mechanics*, as attested by class and other examinations, are, in the opinion of the authorities of the College, such as to justify his admission to the Board's Examination ; *or* (*b*) Produce evidence that he has passed the 1st B.Sc. or the Intermediate Examination in Science of a British University; *or*

(*c*) Present a Senior Certificate obtained at the Local Examinations of the Universities of Oxford or Cambridge, and produce evidence that he has continued his study of science for at least a year, and has obtained a certificate in Subject 3 (*a*) Elementary Chemistry and Physics, (*b*) Botany of Group H of the Oxford Higher Local Examination, *or* in Subjects 1, Elementary Chemistry and Physics, and 4, Botany of Group E of the Cambridge Higher Local Examination; *or*

(*d*) Present a Higher Leaving Certificate in Science (including Chemistry and Botany) of the Scottish Education Department.

5. In the case of students who satisfy the Board that they have not had the facilities for obtaining the foregoing certificates, the Board will be prepared to consider evidence of equivalent attainment. [Applications under this rule must be lodged *three months* before the date of the annual examination.]

6. *Before sitting for the* PRACTICAL AGRICULTURE *and* FARM MACHINERY AND IMPLEMENTS *papers, all candidates must produce evidence of possessing a practical knowledge of Agriculture obtained by residence on a farm for a period or periods (not more than two) covering a complete year of farming operations.*

7. Candidates will have the option of taking the whole of the following nine papers at one time, or of sitting for a group of any three, four, or five in the first year and the remaining subjects (at one examination) within the next two years:—

SUBJECT.	Maximum Marks.	Pass Marks.
1. Practical Agriculture (First Paper)	400	240
2. Practical Agriculture (Second Paper)	400	240
3. Farm Machinery and Implements	300	150
4. Land Surveying and Farm Buildings	100	50
5. Agricultural Chemistry	200	100
6. Agricultural Botany	200	100
7. Agricultural Book-keeping	200	100
8. Agricultural Zoology	100	50
9. Veterinary Science and Hygiene	200	100
	2100	1130

NOTE.—Candidates taking the Examination in two groups of subjects are recommended to take Agricultural Chemistry and Agricultural Botany in the first group.

8. A candidate who obtains not less than three-fourths (1575) of the aggregate maximum marks (2100) in the entire Examination will receive the Diploma with Honours, provided that he obtains not less than three-fourths (600) of the maximum marks (800) in the two Practical Agriculture papers.

9. Candidates electing to take the entire Examination at one time and failing in not more than three subjects may appear for these subjects in the following year. Failure in more than three subjects will be regarded as failure in the whole Examination.

10. In the case of candidates electing to take the Examination in two groups—

(*a*) A candidate appearing for a group of *three* subjects and failing in a single subject may, *in the case of a first group*, appear for that subject along with the second group, or, *in the case of a second group*, in the following year. Failure in more than one subject will be regarded as failure in the group.

(*b*) A candidate appearing for a group of *four* or more subjects and failing in not more than two subjects may, *in the case of a first group*, appear for these subjects along with the second group, or, *in the case of a second group*, in the following year. Failure in more than two subjects will be regarded as failure in the group.

11. Non-returnable fees must be paid by candidates as follows:—

Entire Examination . . .	Six guineas.
Group of Subjects . . .	Three guineas.
Reappearance for any Subjects .	10/6 per Subject.

12. The Board reserve the right to postpone, abandon, or in any way, or at any time, modify an Examination, and also to decline at any stage to admit any particular candidate to the Examination.

The Examination will take place at Leeds University on THURSDAY, 14th APRIL 1932, and following days.

Forms of application for permission to sit at the Examination may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C. 1," or from "The Secretary, Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh," and must be returned duly filled up not later than SATURDAY, 20th FEBRUARY 1932, when the Entries will close.

SYLLABUS OF SUBJECTS OF EXAMINATION

PRACTICAL AGRICULTURE.

1.—FIRST PAPER.

1. *British Farming.*—Arable, stock-raising, dairying—Approximate areas covered by the different systems—Typical examples of each—Area in Great Britain under chief crops—Numbers of live stock—The recent history of agriculture—Short summary of agricultural returns.

2. *Climate.*—The effect of climate on farming practice—Rainfall—Temperature—Prevailing winds—Weather forecasts.

3. *Soils.*—The influence of geological formations on the systems of farming—Classification of soils—Character and composition—Suitability for cultivation—Reclamation—Drainage—Irrigation—Warping—Application of lime and marl—Bare fallows—Tillage—Subsoiling—Deep and thorough cultivation.

4. *Manures.*—The manures of the farm—The treatment of farmyard manure—The disposal of liquid manure and sewage—General manures—Special manures—Field trials of manures—The application of manures—Period of application and amounts used per acre —Unexhausted value of manures and feeding-stuffs.

5. *Crops.*—Wheat, barley, oats, rye, beans, peas, potatoes, turnips, swedes, mangolds, sugar beet, forage plants, hops, and other crops—Their adaptation to different soils and climates—Varieties—Selection of seed—Judging seeds—Cultivation, weeds and parasitic plants, best methods of prevention and eradication—Harvesting—Storing—Cost of production—Improvement of crops by selection and hybridising—Field trials—Methods which the farmer may adopt—Selection to resist disease—The principles of rotations—Rotations suitable for different soils and climates—Rotations and the maintenance of fertility—Green manuring—Leguminous crops in rotation—Catch crops—The advantages and disadvantages of rotations—Specialised farming—Management of Orchards.

2.—Second Paper.

6. *Live Stock.*—The different breeds of British live stock—Their origin, characteristics, and comparative merits—Suitability for different districts—Breeding—General principles—Selection—Mating —Crossing—Rearing and general management—Breeding and rearing of horses, cattle, sheep, pigs, and poultry—Rearing colts and raising store stock—The foods of the farm—Their composition and suitability for different classes of stock—Purchased foods—Composition and special value—Rations for different kinds and ages of stock—Cost of producing beef, mutton, pork, and milk—Cost of feeding farm horses.

7. *The disposal of Crops, Produce, and Stock.*—Marketing grain and other crops—Sale of stock—Live weight—Dead weight.

8. *Milk.*—The production and treatment of milk—The manufacture of cheese, butter, &c.—The utilisation of by-products.

9. *Farming Capital.*—Calculations of the stocking and working of arable, stock, and dairy farms—Farm valuations—Rent and taxes.

10. *Labour.*—Organisation of labour—piece-work, time-work—labour costings.

11. *Renting a Farm.*—Indications of condition, productive power, and stock-carrying capacity—Leases—Conditions of occupancy.

N.B.—*It is essential that a candidate know his subject practically, and that he satisfy the Examiner of his familiarity with farm work and management.*

3.—FARM MACHINERY AND IMPLEMENTS.

1. *Power.*—The principle of action, construction, method of working, also care and management of steam engines and boilers, gas, oil and petrol engines and agricultural tractors—Cost and working expenses in connection with the above—Estimation of the brake horse-power of engines—Power derived from water—Measure-

ment of the quantity of water flowing in a stream—General arrangement of water-power plants—Water-wheels—Turbines—Pumps, principle of action and construction—Flow of water through pipes —Hydraulic ram—Windmills.

2. *Agricultural Implements and Machinery.*—The mode of action and the general principles involved in the construction and working of farm implements and machinery—Arrangement of machinery with respect to the power plant—Pulleys and belting—Shafting and bearings—Lubrication—Lifting appliances—Strength and care of chains—Concrete and its use in the construction of simple foundations for engines and machines.

3. *Implements of Cultivation.*—Ploughs—Cultivators—Grubbers—Harrows—Drills—Manure Distributors—Seeding and planting implements.

4. *Implements of Harvesting.*—Mowing and Reaping machines—Rakes—Tedders—Elevators—Potato raisers.

5. *Implements of Transit.*—Carts, waggons, rick lifters, tractors.

6. *Threshing and Food-preparing Machinery.*—Threshing machines, stationary and portable—Screen Winnowers—Hummelers, Chaff cutters—Pulpers—Cake breakers.

7. *Dairy Appliances.*—Milking machines—Cream separators—Churns and other butter-working appliances—Milk delivery cans —Cheese-making utensils—Vats and presses.

N.B.—*Candidates are expected to have had some experience with agricultural machinery and implements under actual working conditions, and to be capable of illustrating their answers, when necessary, by intelligible sketches or diagrams.*

4.—LAND SURVEYING AND FARM BUILDINGS.

1. The use and adjustment of instruments employed in Surveying and Levelling other than the Theodolite.

2. Land surveying by chain—Plotting from field book, and determination of areas surveyed—The simpler " field problems."

3. Levelling and plotting from field book.

4. A knowledge of the various classes of maps published by the Ordnance Survey Department and their Scales.

5. *Roads and Fences.*—The construction and maintenance of farm roads, fences, and ditches.

6. *Land Drainage.*—Methods of draining; mole and pipe drains; cost of construction and maintenance.

7. *Buildings.*—Buildings required on different classes of farms—Economical arrangement of farm buildings—Materials—Construction—Ventilation—Drainage—Water supply—Dimensions of dairy, stables, cowsheds, yard, courts, and piggeries—Accommodation for power—Implement, machinery, and cart sheds—Hay and grain sheds—Shelter sheds—Storage of manure.

N.B.—*Each candidate should have with him at the Examination a pair of compasses, scales of equal parts, including scales of one chain to the inch,* 4 *feet to the inch,* 8 *feet to the inch, and the scale fitting the Ordnance map,* $\frac{1}{2500}$ *or* 25·344 *inches to the mile, a small protractor, a set square, and a straight-edge about* 18 *inches in length.*

5.—AGRICULTURAL CHEMISTRY.

1. *The Atmosphere.*—Its composition and relations to plant and animal life.

2. *Water.*—Rain water—Soil water and drainage—Drinking water—Sewage and irrigation.

3. *The Soil.*—Origin, formation, and classification of soils—Sampling—Analysis—Composition of soils—The chemical and physical properties of soils—The water and air of the soil—Biological changes in the soil—The soil in relation to plant growth—Fertility—Causes of infertility—Improvement of soils.

4. *Manures.*—Theories of manuring—Classification of manures—Origin, nature, and characteristics of manures—Manufacture of manures—Composition, analysis, adulteration, and valuation of manures—Farmyard manure and other natural manures—Green-manuring—Liming, marling, claying—Artificial manures, their origin and manufacture—Fertilisers and Feeding Stuffs Act—Sampling of manures.

5. *Poisons, Antiseptics, and Preservatives.*—General chemical composition and character of insecticides, fungicides, antiseptics, and preservatives used on the farm.

6. *Plants and Crops.*—Constituents of plants—Assimilation and nutrition of plants—Sources of the nitrogen and other constituents of plants—Germination—Action of enzymes—Composition and manurial requirements of farm crops—Food products derived from crops—Manuring experiments.

7. *Animals.*—Composition of animal body—Animal nutrition—Digestion—Assimilation, metabolism, respiration, and excretion.

8. *Foods and Feeding.*—Constituents of foods—Origin, nature, and composition of chief feeding-stuffs—Sampling, analysis, and adulteration of foods—Nutritive value and digestibility of food—Functions of chief food constituents—Energy values—Vitamines—Relation of foods to the production of work, meat, milk, and manure—Manurial residues of foods.

9. *Dairy Chemistry.*—The composition of milk, cream, butter, cheese, &c.—Conditions which influence the composition of milk and milk products—Action of ferments and enzymes on milk and milk products—Milk-testing—Analysis and adulteration of dairy products.

N.B.—*Candidates who are in possession of Laboratory Notes are required to bring them to the Oral Examination in this subject.*

6.—AGRICULTURAL BOTANY.

In addition to a *general knowledge* of the morphology, histology, and physiology of plants, candidates will be expected to possess *detailed knowledge* of the following subjects :—

The classification of plants of importance in agriculture as shown by a detailed study of the genera, species, and botanical varieties of the British Crop Plants and Weeds included in the following families—

Ranunculaceæ.
Cruciferæ.
Caryophyllaceæ.
Leguminosæ.
Rosaceæ.
Umbelliferæ.
Compositæ.
Solanaceæ.
Scropulariaceæ.
Labiatæ.
Chenopodiaceæ.
Polygonaceæ.
Liliaceæ.
Gramineæ.

British grasses of agricultural importance: recognition of, at any stage of growth. Habitats of important species. Constitution of the grass flora of good meadows and pastures. Composition of seed mixtures for temporary and permanent leys on various soils. The effects of artificial manures on the flora of grass land.

The weeds of arable and grass land. Poisonous and parasitic weeds. Methods of distribution by seed and vegetatively: of eradication. Weeds as soil indicators. Recognition of the seeds of the common weeds, particularly those characteristically found in clover, grass, &c., seed.

The chief varieties of wheat, barley, oats, clovers, roots, and other farm crops: their suitability for various climatic and soil conditions. The identification of the more important types of cereals by means of their grain characters. Characteristics of good and bad samples of cereals.

Identification of materials used in feeding cakes and meals.

Plant-breeding. Principles of heredity in plants. Pure lines. Fluctuating variability. Selection.

Disease in plants. Diseases due to the effects of parasitic fungi. Resistance to disease: conditions affecting. Fungoid diseases scheduled from time to time by the Ministry of Agriculture and Fisheries.

Yeasts and fermentation.

The general outlines of bacteriology: nitrogen fixation, nitrification, and denitrification. Putrefaction and the bacteriology of milk, butter, and cheese.

N.B.—*Candidates who are in possession of Laboratory Notes are required to bring them to the Oral Examination in this subject.*

7.—AGRICULTURAL BOOK-KEEPING.

1. Advantages of book-keeping to the farmer. Difficulties and how they can be overcome. Objects of book-keeping.
2. General principles of book-keeping. Double-entry system. Description and use of various books. Ledger, journal, cash-book, petty cash-book, day-books, &c. Entering transactions; posting; trial balance; closing the accounts. Single-entry system.
3. Special ledger accounts: Interest, depreciation, rent and rates, improvements, private and household expenses, profit and loss and capital; partnership accounts.
4. Bank business. Opening a bank account. Use of cheques. Deposits and overdrafts.
5. General office work; correspondence, order notes, invoices, rendering accounts, receipts, &c. Filing systems.
6. Farm valuations for book-keeping purposes. Dates for stock-taking and principles of valuation. The farm balance-sheet.
7. Systems of farm book-keeping. Conditions that determine the most suitable system. Advantages and drawbacks of each system.
8. Accounts for the owner-occupier. Treatment of rent. Incidence of rates and tithe in England and Scotland, and their treatment as between farm and estate accounts. Improvements and upkeep and the general principles relating to maintenance claims.
9. Cost accounting. General principles and methods. Advantages, objects, difficulties.

10. Interpretation of results from ordinary and from cost accounts. Precautions necessary. Use of accounts as a guide to efficient management.

11. Income Tax. How the farmer is assessed. Preparation of Income Tax return. Treatment of Income Tax in accounts.

8.—AGRICULTURAL ZOOLOGY.

The Examination is designed to test practical knowledge, and therefore Candidates will be expected to recognise the animals of agricultural importance referred to in the Syllabus.

GENERAL.

A general knowledge of the characteristics of living animals and how they differ from plants.

One-celled animals, *e.g.*, Amoeba, and many-celled animals.

General outline of the classification of animals and the characters on which it is based.

Organic Evolution. Theories of Heredity.

SPECIAL.

I. *Invertebrates.*—A. The Worm Parasites of Stock. Flat and Round Worms. Structure and Life History, for example, of Liver-fluke, Tapeworm, Ascaris. The mode of life and life history of the chief worm enemies of the domesticated animals. Preventive and remedial measures.

B. The Arachnid enemies of Stock : Mange or Scab Mites, Demodex Mites, Ticks. External structure and life history. Control measures.

C. The Insect enemies of Stock: (*a*) External parasites, *e.g.*, gadflies, warble flies, blue bottles, green bottles, stable fly, ked, lice. (*b*) Internal parasites, *e.g.*, bot and warble flies.

D. Insects injurious to Crops: Structure and classification of insects. Mode of life and life history of the chief insect pests of agricultural crops.* Control, preventive and remedial measures—natural control ; artificial control (Insecticides).

* *The chief pests are detailed in Pamphlets issued by the Ministry of Agriculture and Fisheries.*

E. Other invertebrates of agricultural importance, *e.g.*, earthworms, eelworms, slugs and snails, centipedes and millepedes, gall mites.

II. *Vertebrates.*—Birds : the commoner birds of farm importance, their recognition and an estimate of their work.

Mammals: Outstanding characters for recognition, and the economic importance of :—

1. Ungulata or Hoofed Mammals, *e.g.*, horse, pig, cattle, sheep, deer.
2. Rodentia or Gnawing Mammals, *e.g.*, hares, rabbits, rats, mice, voles, squirrels.
3. Insectivora, *e.g.*, mole, hedgehog, shrew.
4. Carnivora, *e.g.*, dog, fox, polecat, stoat, weasel, badger.

N.B.—*Candidates who are in possession of Laboratory Notes are required to bring them to the Oral Examination in this subject.*

9.—VETERINARY SCIENCE AND HYGIENE.

1. Elementary anatomy and physiology of the horse, ox, sheep, and pig, and their relation to unsoundness and disease.
2. The general principles of breeding—including the physiology of reproduction, the laws of heredity, the periods of gestation, and the signs of pregnancy in the mare, cow, ewe, and sow.
3. Dentition as a means of determining the age of horses, cattle, sheep, and swine.
4. The management of farm stock in health and disease.

N.B.—*Candidates who are in possession of Laboratory Notes are required to bring them to the Oral Examination in this subject.*

WINNERS OF DIPLOMA IN 1931.

Diploma.

JOHN BETT, Edinburgh and East of Scotland College of Agriculture.
ANDREW NOBLE BLACK, West of Scotland Agricultural College, Glasgow.
RICHARD WILLIAM BRIMACOMBE, South-Eastern Agricultural College, Wye, Kent.
JAMES STEVENSON BROWN, Edinburgh and East of Scotland College of Agriculture.
ROBERT HUGH BROWNE, Midland Agricultural College, Sutton Bonington, Loughborough.
DAVID ROBERT BROWNING, University of Reading.
JOHN BURGESS, Seale Hayne Agricultural College, Newton Abbot, Devon.
COLIN HARRISON CAMPBELL, West of Scotland Agricultural College.
DOUGLAS CAMPBELL, West of Scotland Agricultural College.
ARTHUR EDWARD CASEMENT, Edinburgh and East of Scotland College of Agriculture.
PATRICK CONROY, Royal College of Science, Dublin.
DAVID EVAN DAVIES, University College, Bangor.
THOMAS DAWSON, Armstrong College, Newcastle-on-Tyne.
HENRY SAXELBY DYER, Seale Hayne Agricultural College.
DEREK LESLIE EDMUNDS, University of Reading.
ROGER BERTHOLD FERRO, University of Leeds.
JOHN CLIFFORD FLETCHER, South-Eastern Agricultural College.
JOHN ELSTON FOX, University of Leeds.
NORAH OAKES FREETH, University of Reading.
CLEMENT PATRICK GAMAN, Harper Adams Agricultural College, Newport, Shropshire.
ALBERT GANE, Harper Adams Agricultural College.
GORDON GEORGE GREGORY, University of Reading, and Seale Hayne College.
ROLAND PRITCHETT HALE, Armstrong College.
EDWIN HUMPHREY HINTON, East Anglian Institute of Agriculture, Chelmsford.

Henry Thomas Horsman, South-Eastern Agricultural College.
Leslie Edward Hughes, Harper Adams Agricultural College.
Harry Neil Jacobs, University of Reading.
Alfred Charles Jenkins, Seale Hayne Agricultural College.
Arthur Frank Johnson, University of Leeds.
James Benjamin Phillips Jones, University College, Aberystwyth.
James Kirkbride, Armstrong College.
John Irvine Littlewood, University of Leeds.
Neil Frank M'Cann, Harper Adams Agricultural College.
Walter Knox Macfarlane, University of Glasgow and West of Scotland Agricultural College.
Alasdair Hugh MacKinnon, West of Scotland Agricultural College.
Duncan MacDougall MacLiver, West of Scotland Agricultural College.
Alexander Campbell M'Millan, West of Scotland Agricultural College.
Alexander Gibson Malcolm, West of Scotland Agricultural College.
William Barker Mitchell, Armstrong College.
Thomas Murdoch, West of Scotland Agricultural College.
Hugh Victor Newby, East Anglian Institute of Agriculture.
John Alan Newstead, East Anglian Institute of Agriculture.
William Hosken Parker, Harper Adams Agricultural College.
James Steel Paterson, West of Scotland Agricultural College.
John Baillie Paterson, West of Scotland Agricultural College.
Osmond John Pattison, Armstrong College.
Cecil John Pope, Midland Agricultural College.
Donald Edwin Ralph, University College, Aberystwyth.
Edward Frank Roberts, University of Reading.
James Englebert Rowe, University of Reading.
Osbert H. C. Rowe, University of Leeds.
James Simpson, West of Scotland Agricultural College.
Clifford George Smith, University of Reading.
William Frederick Spencer, University of Reading.
William Park Strang, University of Reading.
Wilfred Arthur Taylor, University of Leeds.
James Murray Thomson, West of Scotland Agricultural College.
Thomas Leslie Vondy, University of Leeds.
Thomas Godfrey Walton, Armstrong College.
Raymond Herbert Weeks, University of Reading.
Robert William Woods, Seale Hayne Agricultural College.

Examination Papers of Past Years.

Copies of papers set at past Examinations in Agriculture, so far as available, may be had on application. Price 6d. per set.

(N.D.A. Papers available are those for the years 1923-1931.)

NATIONAL DIPLOMA IN DAIRYING

This Examination, instituted in 1897, is conducted by "The National Dairy Examination Board," appointed jointly by the Royal Agricultural Society of England, the Highland and Agricultural Society of Scotland, and the British Dairy Farmers' Association.

REGULATIONS FOR EXAMINATION IN THE SCIENCE AND PRACTICE OF DAIRYING

1. The Societies may hold annually in England and in Scotland, under the management of the National Dairy Examination Board appointed by them, one or more examinations for the National Diploma in the Science and Practice of Dairying; the Diploma to be distinguished shortly by the letters 'N.D.D.'

2. The Examinations will be held on dates and at places from time to time appointed and duly announced.

3. Forms of Entry for the Examination in England may be obtained from 'The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C.1,' and must be returned to him duly filled up, with the entry fee, on or before Thursday, July 21st, 1932.

4. Forms of Entry for the Examination in Scotland may be obtained from 'The Secretary, Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh,' and must be returned to him duly filled up, with the entry fee, on or before Tuesday, August 2nd, 1932.

5. Any candidate may enter for the Examination either in England or Scotland, but not in both, and a candidate who has once taken part in an Examination in England cannot enter for an Examination in Scotland, or *vice versa. An exception may be made in favour of a candidate reappearing under Regulation* 10 (3) *provided special application is made at the time of entry.*

6. As a preliminary to the acceptance of an application for permission to enter for the Examination, a candidate must produce :—

(1) A certificate testifying that he or she has attended a Diploma Course in the subjects of the Examination covering *two academic years* at an approved Dairy Training Institution and has satisfied the authorities of the Institution of his or her fitness for admission to the Examination. This period shall include six session months' instruction (consisting of not more than two periods) in practical dairy work.

(2) Evidence that he or she has spent at least six months on an approved Dairy farm and taken part in the work. This period must not run concurrently with the six months' practical training referred to in subsection 1.

A Dairy Farm to be approved must have not fewer than fifteen cows kept in daily milking.

7. A candidate who has already taken a Degree in Agriculture of a British University or a Diploma in Agriculture recognised by the National Dairy Examination Board, will be allowed to enter for the National Diploma in Dairying Examination after one year's subsequent training at an approved Dairy Training Institution, providing that such course includes at least six months' training in practical dairy work, and that he or she has worked for at least six months on an approved Dairy Farm.

8. In the Examination a candidate will be required to satisfy the Examiners by means of written papers, practical work, and *viva voce*, that he or she has :—

(1) A general knowledge of the Management of a Dairy Farm, including the rearing and feeding of Dairy Stock, the candidate being required to satisfy the Examiners that he or she has had a thorough training and practical experience in all the details of Dairy work as pursued on a farm.

(2) A thorough acquaintance, both practical and scientific, with everything connected with the management of a Dairy, and the manufacture of Butter and Cheese.

(3) A general knowledge of Dairy Factory Management, Dairy Hygiene, Dairy Engineering, and Dairy Book-keeping.

(4) Practical skill in Dairying, to be tested by the making of Butter and Cheese.

NOTE.—A candidate must be prepared to make any one of the following varieties of Hard Pressed Cheese, the Examiner in Cheese-making having the option of saying during the Examination what variety a candidate shall make :—

AT THE ENGLISH CENTRE : Cheddar, Cheshire, or Derby.

AT THE SCOTTISH CENTRE : Cheddar, Dunlop, or Cheshire.

9. The maximum marks obtainable, and the marks required for a pass in each subject are as follows:—

	Max.	Pass.
Written Examination—		
Dairy Farming	150	90
Dairy Hygiene	100	60
Dairying—		
(*a*) Principles of Dairying	150	90
(*b*) Dairy Factory Management and Dairy Engineering	100	50
Chemistry—		
(*a*) General Chemistry and Physics. (*b*) Dairy Chemistry.	100	60
Dairy Bacteriology	100	60
Dairy Book-keeping	100	50
Practical Examination—		
Hard-pressed Cheese-making	200	150
Blue-veined Cheese-making	100	75
Soft Cheese-making	100	75
Butter-making	200	150
	1400	910

Honours will be awarded to candidates obtaining an aggregate of 80 per cent (1120) of the maximum marks (1400) in the Examination, provided that they also obtain at least 80 per cent (400) of the maximum marks (500) in the Dairy Farming, Hygiene, and Dairying papers.

10. (1) A candidate who fails in any part of the practical examination shall fail in the whole examination.

(2) A candidate who fails in four or more subjects of the written examination shall fail in the whole examination.

(3) A candidate who, having passed in the practical examination, fails in not more than three subjects of the written examination may, at the discretion of the Board, appear for those subjects in the following year.

11. A non-returnable fee of *Three Guineas* will be required from each new candidate. The fee for reappearance in the whole Examination will be *Three Guineas*, and for reappearance in not more than three written papers 10*s*. 6*d*. each subject.

12. The Board reserve the right to postpone, to abandon, or in any way or at any time to modify an Examination, and also to decline at any stage to admit any particular candidate to the Examination.

DATES OF EXAMINATIONS.

ENGLAND.—Thursday, 8th September 1932, and following days, at the University and British Dairy Institute, Reading. Last date for receiving applications, Thursday, July 21st.

SCOTLAND.—At Dairy School, Auchincruive, Ayr. WRITTEN—Thursday, Friday, and Saturday, 8th, 9th, and 10th September 1932. ORAL AND PRACTICAL—Monday, September 19th, and following days. Last date for receiving applications, Tuesday, August 2nd.

SYLLABUS OF SUBJECTS OF EXAMINATION.

1.—DAIRY FARMING AND DAIRY HYGIENE.

(*a*) DAIRY FARMING.

SOILS AND CROPS.—Types of Soils suitable for dairying. Rotations and systems of cropping. Cultivation, manuring and management of grain, root and forage crops used in dairying. Silage. Temporary and permanent pastures, haymaking.

PLANT PHYSIOLOGY.—Roots, shoots, flowers, fruit and seeds of agricultural plants.

DAIRY CATTLE.—Characteristics of different breeds. Relation of conformation and appearance to Milk Yield. Choice of dairy cattle in relation to climate and soil. The milk yields of the more important breeds, and suitability for the milk trade, cream, butter and cheese production.

The management of a Dairy Herd. Cattle breeding and grading up of dairy stock. Calf rearing and management of young stock.

Milk Recording. Systems, and utilisation of results. Details of official schemes.

FOODS AND FEEDING.—Summer and winter feeding of dairy cattle and young stock. Fodder crops and green forage. Roots. Ensilage. Concentrated foods, meals, cakes. Preparation of food. The effect of food on milk and its products.

PIG KEEPING.—Characteristics of the more important breeds. The breeding, rearing and fattening of pigs. Production of pork and bacon.

FARM MANAGEMENT.—Systems of dairy farming. The selection, stocking and equipment of typical farms. Organisation of the farm and disposal of produce.

DAIRY ECONOMICS.—The Dairy Industry of Great Britain and its relationship to Agriculture. The relative importance of the various products. The retail milk trade. Markets, Dairy organisation and co-operation. Modern developments in the Dairy industry. Sources of imported Dairy Produce.

(*b*) DAIRY HYGIENE.

ANIMAL PHYSIOLOGY.—General functions of the organs of the animal body. Breeding. Parturition. The structure of the udder and the process of milk secretion. Changes which food undergoes during digestion.

Veterinary Science.—The more important diseases of dairy cattle and their treatment. The transmission and eradication of disease.

Milk Hygiene.—Sanitary conditions. Suitability of water supply. Methods of milking and handling of milk. Regulations affecting milk production. Milk in relation to Public Health.

Farm Buildings.—Situation, chief dimensions and construction of cow houses and dairy buildings. Housing for young stock and pigs. Air space and ventilation, drainage and water supply.

II.—DAIRYING.

(*a*) Principles of Dairying.

Milk.—Milking by hand and machinery. Importance of cleanliness. Cooling of milk. Prevention of contamination. Pasteurisation. Sterilisation. Keeping of milk. Milk testing and sampling. Use of Gerber and Babcock Testers. Interpretation of results. Legal standards. Legislation affecting milk production.

Cream.—Separators and their management. Different systems of cream raising and ripening of cream. Changes during ripening. Natural and artificial ripening, and preparation and uses of starters. Preparation of cream for sale. Uses of preservatives. Clotted cream.

Butter.—Churns and butter-making appliances. Preparation of cream for churning. Washing and working butter. Butter milk. Packing and transmission of butter. Selection and keeping of butter. Salting. Use of preservatives. Characteristics of good butter and method of judging. Circumstances affecting the flavour, texture, colour and keeping qualities of butter. Potting butter for keeping. Causes of inferior butter.

Cheese.—Principles of manufacture. Appliances for cheese-making. The making of the principal varieties of British, Colonial and Continental cheese from cream, whole milk and skim milk. Acidity of milk. Common tests for acidity. Uses of rennet and its substitutes. Whey. Ripening and storage of cheese. Packing and sale of cheese. Making of cream and other soft cheese. Defects in cheese and their causes. Judging cheese.

(*b*) Dairy Factory Management and Dairy Engineering.

Factory Practice.—Milk depots and handling of factory milk. Systems of cooling and refrigeration. Pasteurisation. Factory butter and cheese-making. Milk Powders. Condensed milk. Frozen milk. Ice cream. Dried casein. Fermented milk. Lactose and whey-butter. Margarine manufacture. Equipment of milk depots, butter, cheese and dairy factories.

FACTORY MANAGEMENT.—Factory routine. Organisation of labour. Handling of milk on arrival at the factory. Methods of dealing with the milk. Milk contracts. Dairy factory legislation.

DAIRY APPLIANCES AND MACHINERY.—Appliances used in the production and handling of milk, butter and cheese. Care and management of engines and boilers, dairy factory machinery, refrigerating machinery.

BUILDINGS.—Situation, construction and drainage of creameries, milk depots and dairy factories.

III.—CHEMISTRY.

(*a*) GENERAL CHEMISTRY AND PHYSICS.

CHEMISTRY.—Elements, compounds and mixtures. Chemical symbols, formulæ and equations. Acids, bases, salts: their distinctive properties. Acidity and alkalinity; their quantitive estimation. The Atmosphere: its constituents and impurities; influence on dairying operations. Water: its constitution; pure and natural waters; impurities in water and whence derived. Importance of a good water supply in dairying. General knowledge of elementary chemistry. Oxygen; hydrogen; carbon; nitrogen; phosphorus and sulphur; common metals; common acids; compounds of potassium, sodium, ammonium, calcium.

Elementary organic chemistry; sugar, milk sugar, starch, alcohol, acetic acid, formaldehyde, butyric acid, lactic acid, glycerine, saponification of fats; albumen, casein, pepsin.

PHYSICS.—The different forms of matter; solid, liquid, gaseous. Specific gravity and instruments for determining it. Temperature and methods of measuring it. Expansion; thermometric scales. Influence of temperature in dairy operations. Atmospheric pressure and its measurement. Hygrometry. Heat and its measurement; specific heat. Latent heat. Conduction. Convection. Radiation. Solution. Filtration. Distillation. Simple machines, such as levers, pulleys and light weighing machines.

(*b*) DAIRY CHEMISTRY.

CHEMISTRY OF MILK.—The nature, composition, properties and chemical constituents of milk. Microscopical appearances presented by milk. The influence of feeding. The changes which occur in the keeping of milk, and how produced. The natural and artificial souring of milk. Rennet, its nature and uses.

Milk Products.—Physical and chemical changes involved in the making and keeping of butter and in the manufacture and ripening of cheese. Separated milk. Condensed milk. Fermented milk. Synthetic milk. The use of preservatives.

Dairy Analysis.—Analytical methods, their theory and practice. A general knowledge of the methods employed in the chemical analysis of milk, butter and cheese. Adulteration of milk, cream, butter and cheese, the ways in which adulteration is practised, the changes in composition thereby produced, and a general knowledge of the methods employed in detecting the same.

Chemistry of Feeding.—The principal constituents of food materials and the functions they severally fulfil. The influence of food constituents on milk production. Assimilation and digestion. The manurial value of foods. Milk and milk products as foods.

N.B.—*Candidates are required to bring their Laboratory Notes to the Oral Examination in this subject.*

IV.—DAIRY BACTERIOLOGY.

General Bacteriology.—Bacteria; their form, classification, growth and reproduction. The microscope and its use. Staining and microscopic examination of bacteria. Methods of isolation and cultivation. Preparation of culture media. Fermentations and chemical changes produced by bacteria. Enzymes and their action. Effects of heat, cold, sterilisation, pasteurisation, disinfectants and preservatives on bacteria and enzymes. Bacteriological examination of water supplies.

Bacteriology of Milk.—The changes produced by bacteria in milk. Useful forms and their functions. Harmful forms and their effects. Coagulation, discoloration, taints, &c. Bacteriological and other standards in relation to the cleanliness of milk.

Milk Products.—The bacteria concerned in the ripening of cream and butter-making. 'Starters,' their preparation and management. The ripening of hard, soft and blue-veined cheese. Bacteria injurious to milk products, including condensed and dried milk.

Dairy Mycology.—Moulds and yeasts in dairy practice. Their form, classification, growth and relation to dairy products.

N.B.—*Candidates are required to bring their Laboratory Notes to the Oral Examination in this subject.*

V.—DAIRY BOOK-KEEPING.

General Principles.—Principles of double-entry book-keeping. Use of diary, journal, cash-book and ledger. Posting to ledger. Preparation of profit and loss account and balance-sheet. Systems of valuation.

Farm Book-keeping.—Application of the principles of book-keeping to dairy farming and to the sale of milk in bulk or by retail.

Factory Accounts.—Methods of book-keeping as applied to milk depots and dairy factories.

Business Management.—General office work. Banking and use of cheques.

VI.—PRACTICAL SKILL IN DAIRY WORK.

Candidates must be prepared—(1) to produce before the Examination a satisfactory certificate of proficiency in the milking of cows, signed by a practical Dairy Farmer, and to satisfy the Examiners by a practical test, if so required; (2) to churn and make into Butter a measured quantity of Cream; and (3) to make one Cheese of each of the following varieties: (1) Hard-pressed, of not less than 30 lb. (see Note to Reg. 8 (4)); (2) Veined or blue-moulded, of not less than 10 lb.; and (3) also to make one or other of the following Soft Cheeses: Cambridge, Camembert, Coulommier, or Pont l'Evêque.

WINNERS OF DIPLOMA IN 1931.

Scottish Centre.

Diploma.

James Stevenson Brown, Duloch Home Farm, Dunfermline.
John Burgess, 4 Ladysmith Road, Lipson, Plymouth.
Colin Harrison Campbell, Auchlane, Castle Douglas.
John William Egdell, Garden House, Belsay, Northumberland.
Lily M. H. Fulton, Boydston, Hurlford, Ayrshire.
John Irvine Littlewood, Barncliffe Hall Farm, Shelley, Huddersfield.
Walter Knox Macfarlane, Deanston, Airdrie.
Alexander Campbell M'Millan, Gateside Farm, Stewarton, Ayrshire.
Alex. Gibson Malcolm, Davaar, Causewayhead, Stirling.
Thomas Cossar Marshall, 4 Borden Road, Jordanhill, Glasgow.
Isabel Winifred Mitchell, 7 Edgemont Gardens, Langside, Glasgow.
Louis A. P. Pieris, Veyangoda, Ceylon.
Elsie Cooper Pollock, L'Olivier, Union Street, Motherwell.
Edith Helen May Savage, 18 Scott Street, Dalmuir (West), Glasgow.
James Murray Thomson, 15 Whirlie Road, Crosslee, by Johnstone, Renfrewshire.
Jeannie M. Wallace, West Drumlemble, Campbeltown.
John Wight, 202 Brighton Street, Govan, Glasgow.
Moira S. Wilson, Kilnmaichlie, Ballindalloch.
Robert William Woods, "Parkview," Compton, Marldon, Paignton, Devon.

ENGLISH CENTRE.

Diploma with Honours.

MURIEL DAVIES, University College of Wales, Aberystwyth.

Diploma.

MARY B. ASHLEY, Lancs. C.C. Dairy School, Hutton, Preston.
DAVID ROBERT BROWNING, The University and British Dairy Institute, Reading.
DORA J. CORFIELD, University College, Aberystwyth.
CLAUDE DE CHAZAL, The University and British Dairy Institute, Reading.
GEORGE ELWYN DUNKERLEY, The University and British Dairy Institute, Reading.
MARY ESTCOURT-WEBB, The University and British Dairy Institute, Reading.
NORAH OAKES FREETH, The University and British Dairy Institute, Reading.
HILDA MARGARET HANCOCK, University College, Aberystwyth.
JEAN HARGREAVE INGHAM, Lancs. C.C. Dairy School, Hutton, Preston.
MAIR ELIZABETH JONES, University College, Aberystwyth.
JOAN ROSEMARY LIGHT, The University and British Dairy Institute, Reading.
KATE LLOYD, Midland Agricultural College, Sutton Bonington.
KATHLEEN DAVEY MADDEVER, The University and British Dairy Institute, Reading.
VERA IVY MITCHEM, The University and British Dairy Institute, Reading.
GERTRUDE VIVIEN MOORE, The University and British Dairy Institure, Reading.
BEATRICE EMILY MILDRED NORTHEY, The University and British Dairy Institute, Reading.
MAY PARKINSON, The University and British Dairy Institute, Reading.
MARY PURCELL, East Anglian Institute of Agriculture, Chelmsford.
EDITH MARY ROBSON, Lancs. C.C. Dairy School, Hutton, Preston.
REGINALD SCOTT, Midland Agricultural College, Sutton Bonington.
SYLVIA MARY LOUISA SMITH, Midland Agricultural College, Sutton Bonington.
FRANCES MARY GILIAN TALLENTS, Midland Agricultural College, Sutton Bonington.
GEORGE FREDERICK THISTLETON, Midland Agricultural College, Sutton Bonington.
NOËL THOMPSON, East Anglian Institute of Agriculture, Chelmsford.
RAYMOND HERBERT WEEKS, The University and British Dairy Institute, Reading.

EXAMINATION PAPERS OF PAST YEARS.

Copies of papers set at past Examinations in Dairying, so far as available, may be had on application. Price 6d. per set.

CERTIFICATES IN FORESTRY

The Society grants First and Second-Class Certificates in Forestry.

1. An Examination will be held each year about the month of March.

2. The next Examination will be held at 8 Eglinton Crescent, Edinburgh, on the 8th, 9th, and 10th March 1932, provided a sufficient number of candidates present themselves for examination.

Forms of application may be obtained from the Secretary, The Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh, and must be returned duly filled up on or before 17th February 1932.

3. Candidates must possess—1. A thorough acquaintance with the theory and practice of Forestry. 2. A general knowledge of the following branches of study, so far as these apply to Forestry: (*a*) The Elements of Forest Botany and Forest Zoology; (*b*) The Elements of Meteorology and Geology; (*c*) Forest Engineering, including Land and Timber Measuring and Surveying; Mechanics and Construction, as applied to fencing, draining, bridging, road-making, and saw-mills; and Implements of Forestry; (*d*) Arithmetic and Book-keeping.

4. The Examinations are open to candidates of any age, may be both written and oral, and will include such practical tests as may from time to time be decided to apply.

5. The maximum number of marks for each subject is 100; Pass marks for First-Class Certificate—Forestry, 75; all other subjects, 60. Pass marks for Second-Class Certificate—Forestry, 60; all other subjects, 50.

6. A candidate who obtains Pass marks in certain subjects, but fails in others, may come up for these other subjects alone, it being understood that without the special permission of the Society no candidate will be eligible to enter for more than two subsequent Examinations.

7. A candidate who has obtained the Second-Class Certificate may enter again for the First-Class Certificate.

8. Candidates who obtain the First-Class Certificate in Forestry will be elected Free Life Members of The Highland and Agricultural Society of Scotland.

9. The list of students who obtained certificates prior to 1899 appears in the 'Transactions,' Fifth Series, vol. xi. (1899).

The following have since obtained First-Class Certificates :—

Eric Arthur Nobbs, Department of Agriculture, Cape Town,	1899
George Potts, Grey College, Bloemfontein, Orange River Colony,	1899
Duncan S. Rabagliati, 1 St Paul's Road, Bradford,	1901
Frank Scott, Dumfries House Mains, Cumnock,	1903
William T. Stockley, Rose Villa, Garswood, near Wigan,	1906
A. Frank Wilson, C.D.A. (Edin.), Reedieleys, Auchtermuchty,	1907
George Fisher, Farm Brook, Pilling, Garstang, Lancs.,	1909
John Patten, jun., Hulne Park, Alnwick,	1909
Alexander Mitchell, Dalmeny Park, Edinburgh,	1909
John D. Davidson, Brimstage, Birkenhead,	1911
Donald Doull, M.A., A.R.C.Sc., High School, Kelso,	1911
James W. Mackay, Jervaulx Abbey, Middleham, Yorks.,	1915
Harry Watson, Darnaway, Forres,	1915
Reginald Watt Hunter, 94 St George's Terrace, Newcastle-on-Tyne,	1919
John M'Ewen, Monaughty Forest, by Elgin	1922
Alfred Pope, Swinsty Hall, Fewston, Harrogate	1922
William Lyne Watt, Department of Agriculture, P.O. Box 323, Nairobi, Kenya Colony, Africa,	1926
Robert Lindsay, Royal Botanic Garden, Edinburgh,	1930
George Jamieson Thomson, Coatesgate, Auchen Castle, Moffat,	1930

The following have since obtained Second-Class Certificates :—

William Bruce, B.Sc., East of Scotland College of Agriculture, Edinburgh,	1901
Rajappier Swaminathan, 56 Jesus Lane, Cambridge,	1901
Thomas Usher, Courthill, Hawick,	1901
Allan Carruth, Lawmarnock, Kilbarchan,	1905
Alex. M. Lumsden, Newburn Schoolhouse, Upper Largo,	1905
Robert M. Wilson, Laws Cottage, Duns,	1905
Thomas Campbell, Greystoke, Penrith,	1906
Donald Ferguson, Quarry Lane, Lennoxtown,	1906
Charles Penrhyn Ackers, Huntly Manor, Gloucester,	1908
Robert Howie, Beechwood, Arbroath,	1908
John Trotter, D.Sc., 22 West Savile Terrace, Edinburgh,	1908
James A. S. Watson, Downieken, Dundee,	1908
Norman H. Pearson, 52 Percy Park, Tynemouth,	1909
Lionel F. Stobart, Royal Agricultural College, Cirencester,	1911
Alexander George Norrie, Cairnhill, by Turriff,	1913
William Watt, Darnaway, Forres,	1913
William P. Greenfield, 6 Littlefield Lane, Grimsby,	1915
William M'Ghee, Craigbrae, Straiton, Maybole,	1932

SYLLABUS OF EXAMINATION

I.—SCIENCE OF FORESTRY AND PRACTICAL MANAGEMENT OF WOODS.

I. *Principles of Scientific Forestry.*—1. The tree: conditions essential for its nutrition and growth. 2. The soil: its physical structure and properties. 3. The different forms of woodland crops. 4. Pure woods and mixed woods. 5. Even-aged and uneven-aged woods. 6. Sylvicultural characteristics of the principal trees, broad-leaved and coniferous, including recently introduced species of sylvicultural value.

II. *Forest Organisation.*—7. General ideas regarding the necessity for a national forest policy. 8. Conditions necessary for the formulation of a regulated system of forest management. 9. Working plans, their compilation, construction, and use.

III. *Practical Management of Forests.*—10. Assessment of the suitability of areas for afforestation purposes. 11. Preparation of areas for planting. 12. Treatment of heather, bracken, scrub. 13. Draining and enclosing. 14. Choice of species for various situations. 15. Seed—harvesting, extraction, storage. 16. Nurseries, temporary and permanent—choice of site, internal lay-out, management, including lifting, packing, and transport of plants. 17. Planting and sowing in the forest—methods suited to various conditions. 18. Natural regeneration by seed. 19. Regeneration by cuttings, layers, stool shoots. 20. Formation of mixed woods, even-aged, uneven-aged, temporary and permanent, use of nurse trees, kinds of nurse trees suitable under different conditions. 21. Tending of young woods. 22. Pruning. 23. Thinning.

IV. *Forest Protection against*—24. Fires, wind, snow, deer, rabbits, squirrels, birds, insects, and fungi.

V. *Timber.*—25. Its technical properties. 26. Its defects. 27. Recognition of different kinds of timber. 28. Processes for increasing its durability.

VI. *Utilisation of Produce.*—29. Uses of wood and other produce. 30. Felling. 31. Conversion. 32. Seasoning. 33. Transport. 34. Measurement, classification, valuation, and marketing of standing timber.

II.—FOREST BOTANY AND FOREST ZOOLOGY.

(a) FOREST BOTANY.

The fundamental facts of morphology, physiology, and classification of plants. The structure and function of the plant-cell and the plant-tissues. Their primary distribution. The secondary changes they exhibit in consequence of perennation.

The structure and function of the root and shoot in flowering-plants. Buds, their forms and uses. The flower. The fruit. The seed.

The structure and function of vegetative and reproductive organs of fungi.

Relationship of plants to air, soil, and water. Effect of light, heat, and mechanical agencies upon plants. Nutrition. The nature and elements of the food of plants. Sources of plant-food. The absorption, elaboration, transference, and storage of food. Respiration and transpiration. Parasites and saprophytes. Symbiosis.

Growth of plants in length and thickness. Correlation of growth, pruning. Germination of seeds. Formation of wood and bark. Healing of wounds.

Diseases of plants due to faulty nutrition and unfavourable circumstances of growth. Diseases due to attacks of fungi.

Natural reproduction and propagation by seeds and by buds. Fertilisation of flowers. Hybridisation. Artificial propagation by budding, grafting, layering, and cutting.

The characters of the large groups and classes of the vegetable kingdom. The characters of the families of plants which include the chief timber trees. The botanical characteristics of the principal British forest-trees (including the structural features of their wood). The weeds of the forest and their significance.

(*b*) FOREST ZOOLOGY.

General classification of animals. The differences between Vertebrates and Invertebrates.

Earthworms and their relation to soil formation; life-history and habits.

Snails and Slugs: General characters and habits.

Insects: Structure and metamorphosis. General classification; the orders of insects important in forestry. Habits and life-histories of important insects in the following groups: leaf-eaters, bark and stem borers, root feeders, sucking insects, predaceous and parasitic insects.

Insect Control: Natural control; preventive and remedial measures.

Spiders and Mites: General characters and habits.

Birds: Recognition and relation to forestry of crows, jay, woodpecker, hawks, owls and tits, also game birds.

Mammals: General characters of the main groups represented by the deer, rabbit, hedgehog, and weasel; the relation of these to forestry.

III.—METEOROLOGY AND GEOLOGY.

Meteorology.

The atmosphere, its composition and physical properties. Measurement of pressure and temperature. The barometer. Rain, hail, snow, fog, cloud, dew, the dew-point, hoar frost. Gases injurious to vegetation.

Geology.

The crust of the earth, its structure and denudation. Recognition of igneous, sedimentary, and metamorphic rocks. Weathering of rocks and soils; formation of alluvium, gravels, and glacial deposits. The composition, mode of weathering, and distribution of the various geological formations in the British Isles. The relationship of strata to the configuration of a country and to the overlying soils, rainfall, and drainage.

IV.—FOREST ENGINEERING, INCLUDING LAND AND TIMBER MEASURING AND SURVEYING; MECHANICS AND CONSTRUCTION AS APPLIED TO FENCING, DRAINING, BRIDGING, ROAD-MAKING, AND SAW-MILLS; AND IMPLEMENTS OF FORESTRY.

The use of the level and measuring chain. Chain surveying. Plotting. Levelling and contouring. Measuring and mapping surface areas. Knowledge of the 25″ and 6″ Ordnance Survey maps and their markings. Use of the planimeter. Plane table surveying. The measurement of solid bodies—as timber, stacked bark, faggots, &c., earthwork.

Use and characteristics of materials—as bricks, stone, lime, mortar, cement, concrete, reinforced concrete, iron, steel.

Simple building construction. Roofs of various types. The construction of simple bridges over streams and gullies. Culverts, &c.

The setting out and formation of roads for temporary and permanent use.

Drainage. Gauging of streams. Water-power. Construction of dams, weirs, water channels, &c. The general arrangement and working of estate saw-mills. Timber slides. Forest tramways. Working and management of steam engines and boilers, oil and petrol engines.

The different modes of fencing and enclosing plantations; their relative advantages, durability, cost of construction, and repairs.

Detailed drawings from figured sketches.

V.—ARITHMETIC—BOOK-KEEPING.

1. Arithmetic—including Practice, Proportion, and Decimal Fractions. 2. Book-keeping—including the description of books to be kept, the solution of practical questions in Book-keeping and the preparation of Accounts.

EXAMINATION PAPERS, 1932.

SCIENCE OF FORESTRY AND PRACTICAL MANAGEMENT OF WOODS.

(*All questions to be attempted.*)

1. A proprietor wishes to plant annually 100 acres of forest trees; the trees to be raised in a home nursery. How many acres of nursery ground would be required to produce the requisite number of plants, assuming that two-thirds of the annual acreage would be planted with conifers and one-third with hardwoods.

What proportion of the ground would be required for seed beds; and how would you treat the remainder in order to prepare it for the transplants.

2. What are, in your opinion, the most favourable spacing distances at which to plant trees ? Choose any two coniferous species and any two hardwood species, and state the planting distances you would select for each and your reasons for the spacings you indicate.

3. In the management of young plantations what ought to be one's guiding motive with regard to thinning (1) conifers, (2) hardwoods.

4. State how you would treat a Scots pine plantation which is nearing maturity, having in view the re-establishment of a new crop by natural regeneration.

5. Explain the method you would adopt in laying down the boundary line of an extensive plantation, assuming that the area to be planted is of a hilly and exposed nature.

6. A plantation 500 acres in extent, consisting of larch, Scots pine, Norway spruce and a few hardwoods, is for sale. The trees are eighty years old, and the owner wishes to know their approximate value before offering them in the open market. Explain how you would proceed to count, classify and value the trees.

(*Three hours allowed.*)

FOREST BOTANY AND FOREST ZOOLOGY.

(*a*) BOTANY.

(THREE *questions only to be attempted.*)

1. Describe the water-carriage system in a forest tree. What is the importance of water to the tree ?

2. Compare and contrast the flowering parts of any four of the following: oak, pine, lime, alder, ash, laburnum.

3. Give a general description of 'dry rot,' including measures of control.

4. What are the conditions for the germination of seeds ? State carefully the parts of a seed and the importance of each.

(*b*) ZOOLOGY.

(TWO *questions only to be attempted, of which No.* 1 *must be one.*)

1. Describe fully any insect enemy of a broad-leaved or coniferous tree that has come under your notice. Give your personal observations.

2. Name any four vertebrate animals of forest importance, and describe each under the headings :—

(1) How you would recognise it ?
(2) Whether you consider it harmful or useful, and why ?
(3) How you would encourage or control it ?

3. Give a general description of spiders and mites in their relation to the forester.

(*Two and a half hours allowed.*)

METEOROLOGY AND GEOLOGY.

(FIVE *questions only to be attempted.*)

1. Show how the weathering of rocks is influenced by varying climatic conditions.

2. Define and write short notes on three of the following: (*a*) Isotherms, (*b*) Monsoons, (*c*) Dew-point, (*d*) Isobars, (*e*) Foehn Winds.

3. What are the geological conditions favourable for the obtaining of an Artesian water supply ? Illustrate your answer by diagrams.

4. Distinguish between 'bed-rock' soils and 'drift' soils, and give an account of the characters of one typical soil from each group.

5. What are the features characteristic of a country which has recently undergone glaciation ?

6. Give an account of the characters and distribution in Great Britain of either the *Cretaceous System* or the *Old Red Sandstone.*

(*One hour and a half allowed.*)

FOREST ENGINEERING.

(*All questions to be attempted.*)

1. The foundations for the walls of a building are to consist of Portland cement concrete. State the composition of the concrete you would use. Describe carefully how the concrete should be prepared.

2. Give the contents, in cubic feet, of the following standing trees, with the details of your figures in the beech and elm :—

Description.	Length in feet.	Quarter girt 5½ feet from the ground over bark.
Oak	21	27½
Larch	49	16
Beech	33	24
Elm	29	22½
Scotch Fir . . .	20	15

3. Draw a line ABCD inclined at about 30 degrees to the horizontal. Take points B and C at distances of 4·5 feet and 6 feet from A and D respectively, BC being 7 feet. Set off perpendiculars BF (6 feet) and CE (8 feet) from B and C. Join AF, FE and ED. The figure ADEF represents, to scale, a section of a cutting 100 feet long.

Estimate the quantity of earth, in cubic yards, to be excavated from the cutting.

4. Make up the following Level Book, and check the accuracy of the work.

Plot the section to a horizontal scale of 1 inch to 1 chain, and vertical scale of $\frac{1}{16}$ inch to 10 feet.

B. S.	I. S.	F. S.	Rise.	Fall.	R. L. in feet.	Distance in Links.	Remarks.
5·75					3·0	0	Peg on shore.
12·6		2·15				30	Bottom of cliff.
8·25		1·5				43	
	4·45					48	Top of cliff.
	3·2					136	
	5·35					140	Edge of road.
	4·65					156	Crown of road.
14·7		5·2				172	Edge of road at wall, 6 ft. high.
	12·2					175	Surface of ground behind wall.
	1·7					296	Path.
11·95		1·7				304	
12·4		3·825				394½	
8·75		4·275				485	
	8·25					505	Bottom of retaining wall.
	4·5					505	Top of ditto.
		3·75				555	Surface of ground at house.

5. One of the lines of a chain survey crosses a pond. Give two methods of finding the distance across the pond without using any instrument for measuring angles.

6. A saw-mill is to be driven by a portable steam-engine and boiler. Show by sketches how you would arrange the various machines in the saw-mill shed with respect to the engine. What provision would you make for bringing the logs up to the saw, &c.? Describe the construction of a suitable form of boiler for this kind of work.

(*Two hours allowed.*)

ARITHMETIC AND BOOK-KEEPING.

I. Arithmetic.

(*Only* FOUR *of the following questions to be attempted.*)

Note.—No marks will be awarded to answers unless workings are shown.

1. Find the simple interest on £4800 for 73 days at 5 per cent.

2. It is desired to construct a path along a field 200 yards long, the path to be 4½ feet wide. If the path is to cost 2s. 6d. per square yard, what will be the total cost of constructing the path?

3. A sum of £97, 10s. is received from an autioneer (he having deducted commission at 2½ per cent) for the sale of 4 cows and 2 pigs. It is known that the sale price of each cow was twice as much as the price received for each pig. What was the sale price of cows and pigs separately before deduction of the auctioneer's commission?

4. If the weight of a cubic foot of wood is 3 lb., what would be the weight of a plank of wood 15 feet long, 1 foot broad and 6 inches thick?

5. You are given 74 stobs and 2 strainers to fence the side of a field 200 yards long. How far apart would you place the stobs?

II. Book-keeping.

1. From the following transactions prepare a Cash Book and Ledger Accounts:—

1931.					
Jan.	1.	Cash on hand	£25	0	0
,,	2.	Cash received for live stock sold: cattle, £45; sheep, £95	140	0	0
,,	3.	Paid into bank	140	0	0
,,	4.	Sold stobs on credit to W. Wood	14	0	0
,,	6.	Received invoice from R. Elder for repairs to mill engine	21	0	0
,,	7.	Paid wages for week	7	0	0
,,	9.	Paid R. Elder by cheque £20 (discount allowed, £1)	21	0	0

Jan.	12.	Bought manures from W. Duncan & Co., and paid for same by cash	£12	0	0
,,	14.	Received cash from W. Wood in payment of his account	14	0	0
,,	14.	Drew cash from bank	10	0	0
,,	14.	Paid wages for week	7	0	0
,,	14.	Bought feeding-stuffs from Drummond Brothers on credit	15	0	0

2. What books, other than Cash Book and Ledger, do you consider necessary to fully record the transactions in Question 1 above? State which transactions you would record in these other books.

3. The following are the assets and liabilities of an estate: Stock of timber, £1000; horses, £50; tractor and engine, £125; sum due to creditors, £250; poultry, £20; lorries and carts, £25; cash on hand, £5; bank overdraft, £12; implements, £200; cattle, sheep and pigs, £1000; property, £4000.

Prepare a statement to show the capital belonging to the proprietor.

(*Two hours allowed.*)

VETERINARY CERTIFICATES AND MEDALS

The Society established a Veterinary Department in 1823, but by an arrangement made with the Royal College of Veterinary Surgeons, the Society's examination ceased in 1881. Holders of the Society's Veterinary Certificate are entitled to become Members of the Royal College of Veterinary Surgeons on payment of certain fees, without being required to undergo any further examination. The number of Students who passed for the Society's Certificate is 1183.

The Society votes annually eleven silver medals for Class Competition to each of the two Veterinary Colleges in Scotland, the one in Edinburgh and the other in Glasgow.

CHEMICAL DEPARTMENT

Chemist to the Society—J. F. Tocher, D.Sc., F.I.C., Crown Mansions, 41½ Union Street, Aberdeen.

The object of the Chemical Department is to promote the diffusion of a knowledge of Chemistry as applied to agriculture among the members of the Society, to carry out experiments for that purpose, to assist members who are engaged in making local experiments requiring the direction or services of a chemist, to direct members in regard to the use of manures and feeding-stuffs, to assist them to put the purchase of these substances under proper control, and in general to consider all matters coming under the Society's notice in connection with the Chemistry of Agriculture.

MEMBERS' PRIVILEGES IN RESPECT OF ANALYSES.

The fees for analyses made for members of the Society shall, until further notice, be as undernoted:—

The scale of fees applies only to analyses made for agricultural purposes for the sole and private use of members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed. The scale does not apply to members whose subscriptions are in arrears.

Manures, Feeding-Stuffs, Soils, and Agricultural Products.

The determination of one ingredient in a single sample of a *manure* or of a *feeding-stuff*, ...	5s.
The determination of two or more ingredients in a single sample of a *manure* or of a *feeding-stuff*, . . .	10s.

For example—

Linseed and other cakes, for oil or for albuminoids, .	5s.
Feeding-meals, ground cereals, for oil or for albuminoids,	
Bone-meals, for nitrogen or for phosphate, . .	
Compound manures, for nitrogen or for soluble phosphates, or for insoluble phosphates or for potash, .	
Superphosphate, for soluble phosphate or for insoluble phosphate, ...	
Thomas-phosphate powder, for citric soluble phosphate or for total phosphate, ...	
Linseed and other cakes, for oil and albuminoids, &c., .	10s.
Feeding-meals, ground cereals, for oil, albuminoids, &c.,	
Bone-meals, for nitrogen, phosphate, &c., ...	
Compound manures, for nitrogen, soluble phosphates, insoluble phosphates, and potash, ...	
Superphosphate, for soluble phosphate and insoluble phosphate, ...	
Thomas-phosphate powder, for citric soluble phosphate and total phosphate, ...	

Limestone, giving the percentage of lime,	£0	5	0
Limestone, complete analysis,	1	0	0
Lime, including ground lime, percentage of alkaline lime,	0	5	0
Lime, including ground lime, complete analysis,	1	0	0
Analysis of soil, to determine fertility and recommendation of manurial treatment,	1	10	0
Complete analysis of soil,	2	10	0
Analysis of agricultural products—hay, grain, ensilage, roots, &c.,	1	0	0

Not more than four samples per annum will be analysed under the Society's scheme for any one member.

Note to Members sending Samples for Analysis.

The Directors are anxious to take any steps in their power to expose the vendors of inferior fertilisers and feeding-stuffs, and the members can give them assistance in this by supplying to the Chemist, when sending samples for analysis, information as to the guarantee, if any, on which the goods were sold, and also as to the price charged.

Valuations of manures, according to the Society's scale of units, will be supplied if requested.

DAIRY PRODUCE.

Milk, full analysis,	£0	10	0
,, solids and fat,	0	5	0
,, fat only,	0	2	6

(Not more than six samples of milk per annum will be analysed under the Society's scheme for any one member.)

Butter, full analysis,	0	10	0
,, partial analysis (water and fat),	0	5	0
Cheese,	0	10	0

WATER.

Analysis of water to determine purity and fitness for domestic use (the Committee reserve power to refuse from one member more than two samples annually under the Society's scheme).....at the reduced fee of	1	0	0

(Cases containing bottles for water samples and instructions for sampling are sent from the laboratory on application.)

MISCELLANEOUS.

Search for poisons in food or viscera,	£2	0	0

(Veterinary surgeons are not entitled to have searches made for poisons in food or viscera under the Society's scheme for clients who are not members of the Society.)

Sulphate of copper, percentage of copper and purity,	0	5	0
,, ,, complete analysis,	0	10	0
Arsenic, carbolic acid and tar acids, and other poisons used in making sheep dips, insecticides, &c.,	5s. to £1		

Samples should be sent (carriage paid) to Dr J. F. Tocher, Crown Mansions, 41½ Union Street, Aberdeen.

INSTRUCTIONS FOR SELECTING SAMPLES FOR ANALYSIS.

Manures.

Any method of sampling mutually agreed upon between buyer and seller may be adopted, but the following method is recommended as a very complete and satisfactory one : Four or more bags should be selected for sampling. Each bag is to be emptied out separately on a clean floor, worked through with the spade, and one spadeful taken out and set aside. The four or more spadefuls thus set aside are to be mixed together until a uniform mixture is obtained. Of this mixture one spadeful is to be taken, spread on paper, and still more thoroughly mixed, any lumps which it may contain being broken down with the hand. Of this mixture two samples of about half a pound each should be taken by the purchaser or his agent, in the presence of the seller or his agent or two witnesses (due notice having been given to the seller of the time and place of sampling), and these samples should be taken as quickly as possible, and put into bottles or tin cases to prevent loss of moisture, and having been labelled, should be sealed by the samplers—one or more samples to be retained by the purchaser, and one to be sent to the Chemist for analysis.

Feeding-Stuffs.

Samples of feeding-stuffs which are in the form of meal may be taken in a similar manner.

Samples of cake should be taken by selecting four or more cakes from the bulk. These should be nutted to a size not larger than walnuts. The nutted cake should then be thoroughly mixed and samples of not less than one pound each taken from it. The samples should be put into bottles or tins, sealed up, and labelled. One sample should be sent to the Chemist, and one or more duplicates retained by the purchaser.

Soils.

Dig a little trench about two feet deep, exposing the soil and subsoil. Cut from the side of this trench vertical scrapings of the soil down to the top of the subsoil. Catch these on a clean board, and collect in this manner two pounds of soil taken from the whole surface of the section. Similar scrapings of subsoil immediately below should be taken and preserved separately. Five or six similarly drawn samples at least should be taken from different parts of the field, and kept separate while being sent to the Chemist, that he may examine them individually before mixing in the laboratory.

Vegetable Products.

Turnips, &c., at least 50 bulbs carefully selected as of fair average growth.

Hay, straw, ensilage, &c., should be sampled from a thin section cut across the whole stack or silo, and carefully mixed ; above 2 lb. weight is required for analysis.

Grain should be sampled like manures.

DAIRY PRODUCE.

Milk.—Samples of milk from individual cows should be taken direct from the milk-pail after complete milking. Average samples from a number of cows should be taken immediately after milking. Specify whether the sample is morning or evening milk, or a mixture of these. Samples to be tested for adulteration should not be drawn from the bottom or taken from the top of standing milk, but they should be ladled from the vessel after the milk has been thoroughly mixed. Samples of milk should be sent immediately to the Chemist.

For most purposes a half-pint bottle of milk is a large enough sample.

Butter and Cheese.—About quarter-pound samples are required.

WATERS.

When the water is from a well, it should be pumped for some minutes before taking the sample.

If the well has been standing unused for a long time, it should be pumped for some hours, so that the water may be renewed as far as possible.

If the well has been newly dug or cleaned out, it should be pumped as dry as possible, daily, for a week before taking the sample.

Water from cisterns, tanks, ponds, &c., should be sampled by immersing the bottle entirely under the water, and holding it, neck upwards, some inches below the surface. *Water from the surface should not be allowed to enter the bottle.*

Spring or stream water should not be sampled in very wet weather, but when the water is in ordinary condition. Such waters should be sampled by immersing the bottle, if possible; but if not deep enough for that purpose, a perfectly clean cup should be used for transferring the water to the bottle.

When the bottle has been filled the stopper should be rinsed in the water before replacing it.

Interference with or disturbance of wells or springs, or the ground in their immediate vicinity, must be carefully avoided during sampling, and for at least twenty-four hours before it.

After a sample has been taken, it should be sent to the Chemist as speedily as possible.

A description of the source and circumstances of the water should accompany the sample, as the interpretation of the analytical results depends to some extent on a knowledge of such particulars.

Note.—Stone jars and old wine bottles are unsuitable for conveying samples. Winchester quarts chemically cleaned should be obtained from Dr J. F. Tocher, Crown Mansions, 41½ Union Street, Aberdeen.

LOCAL ANALYTICAL ASSOCIATIONS.

With the view of encouraging, as well as regulating the conduct of, Local Analytical Associations, the Society, from 1881 to 1893, contributed from its funds towards their expenses a sum not exceeding £250 annually. In view of the passing of the Fertilisers and Feeding Stuffs Act, 1893, it was decided, at a meeting of the Directors on the 6th of December 1893, to discontinue that grant after the 1st of March 1894

COMPOSITION AND CHARACTERISTICS OF MANURES AND FEEDING-STUFFS.

(*See* '*Transactions*,' *Fifth Series, vol. xi.*, 1899.)

FORMS OF GUARANTEE

GUARANTEE OF MANURE.

I guarantee that the manure called......................and sold by me to ....contains—

Soluble phosphoric acid = Phosphate of lime dissolved............per cent.
Insoluble phosphoric acid = Phosphate of lime undissolved.........per cent.
Potash salts . . = Potash (K_2O) . . . .per cent.
Total nitrogen . . . .per cent.

Signature of seller........................

Date.................19...

GUARANTEE OF FEEDING-STUFF.

I guarantee that the feeding-stuff called...............and sold by me to ....contains—

.... per cent albuminoids.
.... per cent oil.

Signature of seller........................

Date..................19...

PRICES OF FERTILISERS AND FEEDING-STUFFS FOR SEASON 1932.

(Cash Prices as fixed on 3rd February. These prices are subject to variation from month to month or oftener.)

SUPERPHOSPHATES.

Item to be Valued.		Prices per Unit for the undernoted Percentages.		
Phosphoric Acid Dissolved . .		13·75	16·00	18·0
=Tricalcium Phosphate Dissolved		30	35	39·3
February Price . .	Leith	£2 12 6	£2 17 6	£3 2 6
	Glasgow	2 10 0	2 15 0	3 0 0
Price per Unit . .	Leith	3/9¾	3/7¼	3/5¾
	Glasgow	3/7¾	3/5¼	3/4

FERTILISERS.

(Other than Superphosphates.)

Name of Fertiliser.	**Guarantee.**	**Price per Ton.**	**Price per Unit.**
		£ s. d.	s. d.
Sulphate of Ammonia (neutral) * . .	20·6 % Nitrogen	7 0 0	6 9½
Basic Slag †‡	15·75 % Total Phos. Acid =34·40 % Tric. Phos.	2 10 0	3 2
,, ,, †	16·5 % Total Phos. Acid =36·04 % Tric. Phos.	2 12 6	3 2¼
,, ,, †	17·5 % Total Phos. Acid =38·22 % Tric. Phos.	2 15 0	3 1¾
Potassic Slag	12 % Phos. Acid =26·21 % Tric. Phos. 6 % Potash	3 10 0	P 3 7½ Pot. 4 4¾
Bone Meal (Home and Indian) .	4 % Nit., 20 % Phos. Acid =43·68 % Tric. Phos.	7 0 0	N 15 7 P 3 10¾
Steamed Bone Flour . . .	0·75 % Nit., 27·5 % Phos. Acid =60·06 % Tric. Phos.	5 10 0	N 14 5 P 3 7¼
Calcium Cyanamide (Nitrolim) ‖ . .	20·6 % Nitrogen	7 0 0	6 9½
Ground Mineral Phosphate § . .	26 % Phos. Acid =56·79 % Tric. Phos.	2 7 6	1 10
,, ,, ,, § . .	28 % Phos. Acid =61·15 % Tric. Phos.	2 10 0	1 9½
,, ,, ,, § . .	34 % Phos. Acid =74·26 % Tric. Phos.	3 7 6	1 11¾
Potassic Mineral Phosphate . .	6 % Pot., 21 % Phos. Acid =45·87 % Tric. Phos.	3 5 0	P 2 0 Pot. 3 10
,, ,, ,, . .	9 % Pot., 18 % Phos. Acid =39·30 % Tric. Phos.	3 10 0	P 2 0 Pot. 3 9¼
Nitrate of Soda *	15·5 % Nitrogen	8 16 0	11 4¼
Nitro Chalk *	15·5 % ,,	7 5 0	9 4¼
Kainit	14 % Potash	3 7 6	4 9¾
Potash Salts	30 % ,,	5 7 6	3 7
,, ...	20 % ,,	3 17 6	3 10½
Sulphate of Potash	48·5 % ,,	12 12 6	5 2½
Muriate of Potash	50 % ,,	10 5 0	4 1¼
Compound Fertiliser (concentrated)	12·5 % Nitrogen 12·5 % Sol. Phos. Acid 15 % Potash	10 12 6¶	7 0 3 9 4 6

Ground Lime, in bags (60 % calcium oxide), at Dufftown or Grange, 39/- per ton; (70 % calcium oxide) at Charleston, 35/- per ton; at Dunbar, 32/6 per ton; (75 % calcium oxide) at Cults, 35/- per ton; at Fushiebridge, 32/6 per ton; (85 % calcium oxide) at Cults, 40/- per ton.

English Ground Lime (76 % calcium oxide), to Edinburgh, 42/- per ton; to Lanark, 41/- per ton; to Stirling, 44/- per ton.

Ground Limestone (94 % calcium carbonate), to Edinburgh, 29/- per ton; to Lanark, 28/- per ton; to Stirling, 30/- per ton; in six-ton lots. Bags to be returned to sender.

The prices for all fertilisers are cash prices for two-ton lots in bags at Leith or Glasgow, unless otherwise stated.

* Carriage paid to any railway station in six-ton lots. Four-ton lots 1/- more per ton.

† Price at Leith (5/- less Ex. ship).

‡ The fineness of Basic Slag is such that 80 % of the powder will pass through the standard sieve.

‖ Four-ton lots carriage paid.

§ 90 % passing through standard sieve.

¶ Including cost of mixing

N.B.—When these units are multiplied by the percentages in the analysis of a Manure, they will produce a value representing very nearly the cash price *per ton at which TWO TONS may be bought in fine sowable condition at Leith or Glasgow. Larger purchases may be made on more favourable terms.*

FEEDING-STUFFS.

Name of Feeding-Stuff.	Price per Ton. £	s.	d.	Name of Feeding-Stuff.	Price per Ton. £	s.	d.
Linseed Cake (Home) at Leith	8	10	0	**Medium Bran**	6	5	0
,, ,, at Glasgow	8	15	0	**Thirds or Parings**	6	15	0
Cotton Seed Cake (Bombay)	..			**Dried Distillery Grains**	8	15	0
Cotton Seed Cake (Egyptian) at				**,, Brewers' Grains**	6	12	6
Leith	5	10	0	**Feeding Treacle**	5	10	0
Ground Nut Cake—Leith—				**Locust Beans (Kibbled)***	5	10	0
Decorticated, 9% Oil, 41% Al-				**Maize (Round Plate)***	4	15	0
buminoids	8	0	0	**,, (Flaked)***	6	10	0
Undecorticated, 8% Oil, 31%				**Beans (Imported China) (Glasgow)**	8	5	0
Albuminoids	6	15	0	**Bean Meal**	9	5	0
Palm Kernel Cake	7	17	6	**Soya Bean Meal**	9	10	0
Decorticated Cotton Seed Cake—				**,, Cake**	9	0	0
8% Oil, 43% Albuminoids	7	7	6	**Home Oats (Feeding)**	8	0	0
Decorticated Cotton Seed Meal—				**White Fish Meal (Aberdeen)**	14	10	0
7% Oil, 42% Albuminoids	8	0	0	**,, ,, (Leith)**	15	10	0
Rice Bran Meal	5	15	0	**,, ,, (Glasgow)**	15	15	0
Broad Bran	7	2	6	**Barley Meal (Home)**	7	15	0

* In Railway Sacks.

CLASSIFICATION OF MANURES.

BONE MEALS	Genuine Bone Meal contains about 20 per cent Phosphoric Acid equal to 43·7 per cent Tricalcium Phosphate, and from 2·75 per cent to 4 per cent Nitrogen. If phosphates are low, nitrogen will be high, and conversely.
STEAMED BONE FLOUR	Ground to flour, and containing 27·5 per cent Phosphoric Acid equal to about 60 per cent Phosphates and about ·8 per cent Nitrogen.
MIXTURES AND COMPOUND MANURES	To be valued according to the following units: Nitrogen, 7/-; Soluble Phosphoric Acid, 3/9; Insoluble Phosphoric Acid, 2/9; and Potash, 4/6. The value given is exclusive of mixing, bags, and bagging, and is the value at Leith or Glasgow.
DISSOLVED BONES	Must be pure—*i.e.*, containing nothing but natural bones and sulphuric acid.

INSTRUCTIONS FOR VALUING MANURES.

The unit used for the valuation of manures is the hundredth part of a ton, and as the results of analyses of manures are expressed in parts per hundred, the percentage of any ingredient of a manure when multiplied by the price of the unit of that ingredient represents the value of the quantity of it contained in a ton.

As an example take muriate of potash; a good sample (see p. 51) will be guaranteed to contain 50 per cent of oxide of potash. All potash manures are valued according to the amount of potash (oxide of potash) they yield, and muriate of potash yields 50 per cent of potash (K_2O)—*i.e.*, 50 units per ton; and as a ton of muriate of potash costs £10, 5s., the price of the unit is the fiftieth part of that—viz., 4/1¼. If on analysis a sample of muriate of potash guaranteed to contain 50 per cent of potash is found to contain only 48 per cent, the price per ton will be 8/2½ (twice 4/1¼) less—viz., £9, 16s. 9½d.

Similarly with all other manures, the price per unit is derived from the price per ton of a sample of good material up to its guarantee, and therefore the proper price per ton of a manure is found by multiplying the price of the unit of the valuable ingredient by the percentage as found by analysis. If a manure contains more than one valuable ingredient, the unit value of each ingredient is multiplied by its percentage, and the values so found when added together give approximately the price per ton of the manure.

Nitrate of soda contains no ammonia, but it contains nitrogen, and 14 units of nitrogen are equivalent to 17 units of ammonia.

The commercial values of manures are determined by means of the UNITS in the following manner:—

Take the results of analysis of the manure, and look for the following substances:—

Phosphates dissolved (or soluble phosphoric acid)
Phosphates undissolved (or insoluble phosphoric acid)
Total phosphoric acid
Nitrogen
Potash

No other items but these are to be valued.

Should the results of analysis or the guarantee not be expressed in that way, the chemist or the seller should be asked to state the quantities in these terms.

Suppose the manure is ground mineral phosphate—

The proportion of phosphate present in a sample guaranteed to contain 26 per cent phosphoric acid, may be 24 per cent phosphoric acid. The price per unit of phosphoric acid in ground mineral phosphate (26 per cent grade) is 1s. 10d. The value of ground mineral phosphate containing 24 per cent phosphoric acid is therefore 24 times 1s. 10d., equal to £2, 4s. per ton.

Suppose the manure is a superphosphate—say an ordinary superphosphate, 15 per cent soluble phosphoric acid,—the price per unit of phosphoric acid in superphosphate (16 per cent grade) is 3/7¼ at Leith.

It is valued thus—

Soluble phosphoric acid. 15 times 3/7¼, equal to £2, 14s. 1d.

Insoluble phosphoric acid is not valued in a superphosphate.

Suppose the manure is (1) a compound fertiliser containing 4 per cent nitrogen; 7 per cent soluble phosphoric acid; 3 per cent insoluble phosphoric acid; and 4 per cent potash; and (2) a concentrated compound fertiliser containing 12·5 per cent nitrogen; 12·5 per cent soluble phosphoric acid; and 15 per cent potash. From the units given at the top of the page for "Mixtures and Compound Manures," the values of these two compound fertilisers are obtained as follows :—

The value of the—

		(1)				(2)		
Nitrogen will be . . .	£1	8	0	per ton	£4	7	6	per ton.
Soluble phosphoric acid will be	1	6	3	,,	2	6	10	,,
Insoluble phosphoric acid will be	0	8	3	,,		...		,,
Potash will be	0	18	0	,,	3	7	6	,,
	£4	0	6		£10	1	10	

The value of these manures will thus be £4, 0s. 6d. and £10, 1s. 10d. per ton, exclusive of the cost of mixing, bags and bagging.

Note.—The units have reference solely to the MARKET PRICES of MANURES, and not to their AGRICULTURAL VALUES.

TABLE OF COMPENSATION VALUES FOR 1932.

TABLE SHOWING THE VALUE OF FEEDING-STUFFS AS MANURE PER TON, AND THE COMPENSATION VALUE PER TON OF FOOD CONSUMED, BASED ON THE AVERAGE UNIT PRICES OF FERTILISERS FOR 1932.

The following is a Table showing (under Section A) the average proportions of digested nitrogen, undigested nitrogen, phosphoric acid, and potash present in the feeding-stuffs named. The Table also shows the value per unit of nitrogen (digested and undigested), phosphoric acid, and potash, the prices per unit being the value per unit for compound manures prevailing for 1932. Under Section B of the Table is shown the compensation value per ton of food consumed for each of the feeding-stuffs named, based on the unit prices for 1932. Column (1) of Section B of the Table shows the value per ton recovered in dung; Col. (2) of the same section shows the value of the lasting part of dung per ton; while the remaining three columns show the residual values per ton after one crop, two crops, and three crops have been removed.

In accordance with the decision arrived at by the Committee appointed by a representative meeting of Scottish agriculturists, who reported in September 1917 on the "Compensation for Manurial Improvements and Cumulative Fertility," under the Agricultural Holdings (Scotland) Act, 1908, the value of undigested nitrogen per ton as manure is calculated as being 70 per cent of the value of digested nitrogen. The residual value, after one crop has been removed, is taken as one-half of the original residual value. Residual values, after one crop has been removed, are reduced by one-half after each crop.

Foods.	Value per					
	Digested Nitrogen.			Undigested Nitrogen.		
	Per cent in food. (1)	Value at 7s. per unit. (2)	Two-fifths value to manure. (3)*	Per cent in food. (4)	* Value at 5s. per unit. (5)	Three-fourths value to manure. (6)
		s. d.	s. d.		s. d.	s. d.
Cotton-cake, decorticated	5·92	41 5	16 7	0·98	4 11	3 8
Cotton-cake, undecorticated	2·73	19 1	7 8	0·81	4 1	3 1
Linseed-cake	4·08	28 7	11 5	0·67	3 4	2 6
Linseed	3·28	23 0	9 2	0·32	1 7	1 2
Soya-bean cake	6·10	42 8	17 1	0·75	3 9	2 10
Palm-nut cake	1·88	13 2	5 3	0·62	3 1	2 4
Cocoa-nut cake	2·65	18 7	7 5	0·75	3 9	2 10
Earth-nut cake	6·86	48 0	19 2	0·76	3 10	2 11
Rape cake	3·97	27 9	11 1	0·93	4 8	3 6
Beans	3·48	24 4	9 9	0·52	2 7	1 11
Peas	3·10	21 8	8 8	0·50	2 6	1 11
Wheat	1·49	10 5	4 2	0·31	1 7	1 2
Barley	1·16	8 1	3 3	0·49	2 5	1 10
Oats	1·52	10 8	4 3	0·48	2 5	1 10
Maize	1·22	8 6	3 5	0·48	2 5	1 10
Rice-meal	1·08	7 7	3 0	0·82	4 1	3 1
Locust beans	0·82	5 9	2 4	0·38	1 11	1 5
Malt	1·34	9 5	3 9	0·36	1 10	1 5
Malt culms	3·12	21 10	8 9	0·78	3 11	2 11
Bran	1·98	13 10	5 6	0·52	2 7	1 11
Brewers' and distillers' grains (dried)	2·34	16 5	6 7	0·96	4 10	3 8
Brewers' and distillers' grains (wet)	0·59	4 2	1 8	0·22	1 1	0 10
Dried distillery dreg	3·45	24 2	9 8	1·86	9 4	7 0
Clover hay	1·21	8 6	3 5	1·03	5 2	3 11
Meadow hay	0·88	6 2	2 6	0·62	3 1	2 4
Wheat straw	0·02	0 2	0 1	0·43	2 2	1 8
Barley straw	0·10	0 8	0 3	0·30	1 6	1 2
Oat straw	0·17	1 2	0 6	0·33	1 8	1 3
Mangolds	0·15	1 1	0 5	0·07	0 4	0 3
Swedes	0·16	1 1	0 5	0·09	0 5	0 4
Turnips	0·13	0 11	0 4	0·05	0 3	0 2
Fish-meal	8·08	56 7	22 8	0·90	4 6	3 5

See last paragraph of explanatory note to the Table.

A. TON AS MANURE.						B. COMPENSATION VALUE PER TON OF FOOD CONSUMED.				
Phosphoric Acid.			Potash.			† (1) Value recovered in dung.	‡ (2) Value of lasting part of dung.	Residual Value after		
Per cent in food. (7)	Value at 3s. 9d. per unit. (8)	Three-fourths value to manure. (9)	Per cent in food. (10)	Value at 4s. 6d. per unit. (11)	Three-fourths value to manure. (12)	(13)*	(14)	* (3) One crop. (15)	* (4) Two crops. (16)	* (5) Three crops. (17)
	s. d.	s. d.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
3·10	11 8	8 9	2·00	9 0	6 9	35 9	19 2	9 7	4 10	2 5
2·00	7 6	5 8	2·00	9 0	6 9	23 2	15 6	7 9	3 11	1 11
2·00	7 6	5 8	1·40	6 4	4 9	24 4	12 11	6 6	3 3	1 7
1·54	5 9	4 4	1·37	6 2	4 8	19 4	10 2	5 1	2 7	1 3
1·30	4 11	3 8	2·20	9 11	7 5	31 0	13 11	7 0	3 6	1 9
1·20	4 6	3 5	0·50	2 3	1 8	12 8	7 5	3 9	1 10	0 11
1·40	5 3	3 11	2·00	9 0	6 9	20 11	13 6	6 9	3 5	1 8
2·00	7 6	5 8	1·50	6 9	5 1	32 10	13 8	6 10	3 5	1 9
2·50	9 5	7 1	1·50	6 9	5 1	26 9	15 8	7 10	3 11	2 0
1·10	4 2	3 2	1·30	5 10	4 5	19 3	9 6	4 9	2 5	1 2
0·85	3 2	2 5	0·96	4 4	3 3	16 3	7 7	3 10	1 11	0 11
0·85	3 2	2 5	0·53	2 5	1 10	9 7	5 5	2 9	1 4	0 8
0·75	2 10	2 2	0·55	2 6	1 11	9 2	5 11	3 0	1 6	0 9
0·60	2 3	1 8	0·50	2 3	1 8	9 5	5 2	2 7	1 4	0 8
0·60	2 3	1 8	0·37	1 8	1 3	8 2	4 9	2 5	1 2	0 7
0·60	2 3	1 8	0·37	1 8	1 3	9 0	6 0	3 0	1 6	0 9
0·80	3 0	2 3	0·80	3 7	2 9	8 9	6 5	3 3	1 7	0 10
0·80	3 0	2 3	0·60	2 8	2 0	9 5	5 8	2 10	1 5	0 9
2·00	7 6	5 8	2·00	9 0	6 9	24 1	15 4	7 8	3 10	1 11
2·70	10 2	7 8	1·45	6 6	4 11	20 0	14 6	7 3	3 8	1 10
1·61	6 0	4 6	0·20	0 11	0 8	15 5	8 10	4 5	2 3	1 1
0·42	1 7	1 2	0·05	0 3	0 2	3 10	2 2	1 1	0 7	0 3
0·44	1 8	1 3	0·22	1 0	0 9	18 8	9 0	4 6	2 3	1 2
0·57	2 2	1 8	1·50	6 9	5 1	14 1	10 8	5 4	2 8	1 4
0·40	1 6	1 2	1·60	7 2	5 5	11 5	8 11	4 6	2 3	1 1
0·24	0 11	0 8	0·80	3 7	2 9	5 2	5 1	2 7	1 3	0 8
0·18	0 8	0 6	1·00	4 6	3 5	5 4	5 1	2 7	1 3	0 8
0·24	0 11	0 8	1·00	4 6	3 5	5 10	5 4	2 8	1 4	0 8
0·07	0 3	0 2	0·40	1 10	1 5	2 3	1 10	0 11	0 6	0 3
0·06	0 3	0 2	0·22	1 0	0 9	1 8	1 3	0 8	0 4	0 2
0·05	0 2	0 2	0·30	1 4	1 0	1 8	1 4	0 8	0 4	0 2
7·24	27 2	20 5	0·50	2 3	1 8	48 2	25 6	12 9	6 5	3 2

† The figures in column (13) are the sum of columns (3), (6), (9), and (12).

‡ The figures in column (14) are the figures in column (13) from which the corresponding figures in column (3) have been subtracted.

BOTANICAL DEPARTMENT

Consulting Botanist to the Society—(vacant).

The Society has fixed the following scale of charges for the examination of plants and seeds for the *bona fide* and individual use and information of members of the Society (not being seedsmen), who are particularly requested, when applying to the Consulting Botanist, to mention the kind of examination they require, and to quote its number as appearing in the undernoted Scale of Charges. The charge for examination must be paid at the time of application, and the carriage or postage on all parcels must be prepaid.

Scale of Charges.

1. A report on the purity, amount, and nature of foreign materials, and the germinating power of a sample of seed . . 1s.
2. Determination of the species of any weed or other plant, or of any vegetable parasite, with a report on its habits and the means for its extermination or prevention . . . 1s.
3. Report on any disease affecting farm crops . . . 1s.
4. Determination of the species of any natural grass or fodder plant, with a report on its habits and pasture or feeding value . . . . 1s.

The Consulting Botanist's Reports are furnished to enable members—purchasers of seeds and corn for agricultural or horticultural purposes—to test the value of what they buy, and are not to be used or made available for advertising or trade purposes by seedsmen or otherwise.

Purchase of Seeds.

The purchaser should obtain from the vendor, by invoice or other writing, the proper designation of the seed he buys, with a guarantee of the percentage of purity and germination, and of its freedom from ergot, and in the case of clover, from the seeds of dodder or broom-rape.

It is strongly recommended that the purchase of *prepared mixtures* of seeds should be avoided. The different seeds should be purchased separately and mixed by the farmer: mixtures cannot be tested for germination.

The Sampling of Seeds.

The utmost care should be taken to secure a fair and honest sample. This should be drawn from the bulk delivered to the purchaser, and not from the sample sent by the vendor.

When legal evidence is required, the sample should be taken from the bulk, and placed in a sealed bag in the presence of a witness. Care should be taken that the sample and bulk be not tampered with after delivery, or mixed or brought in contact with any other sample or bulk.

At least one ounce of grass and other small seeds should be sent, and two ounces of cereals and the larger seeds. When the bulk is obviously impure the sample should be at least double the amount specified. Grass seeds should be sent at least four weeks, and seeds of clover and cereals two weeks, before they are to be used.

The exact name under which the sample has been sold and purchased should accompany it.

Reporting the Results.

The Report will be made on a schedule in which the nature and amount of impurities will be stated, and the number of days each sample has been under test, with the percentage of the seeds which have germinated.

"Hard" clover seeds, though not germinating within the time stated, will be considered good seeds, and their percentage separately stated.

The impurities in the sample, including the chaff of the species tested, will be specified in the schedule, and only the percentage of the pure seed of that species will be reported upon; but the REAL VALUE of the sample will be stated. The Real Value is the combined percentages of purity and germination, and is obtained by multiplying these percentages and dividing by 100: thus in a sample of Meadow Fescue having 88 per cent purity and 95 per cent germination, 88 multiplied by 95 gives 8360, and this divided by 100 gives 83·6, the Real Value.

Selecting Specimens of Plants.

The whole plant should be taken up and the earth shaken from the roots. If possible the plants must be in flower or fruit. They should be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. They should be placed in a bottle, or packed in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.) which, in the opinion of the sender, would be likely to throw light on the inquiry.

NOTE.—Members are reminded that Seeds may now be tested at the Department of Agriculture for Scotland Seed-Testing Station. Samples should be addressed to T. Anderson, Esq., Seed-testing Station, East Craigs, Corstorphine, Midlothian.

ENTOMOLOGICAL DEPARTMENT

Consulting Entomologist to the Society—R. Stewart MacDougall,
M.A., D.Sc., Ivy Lodge, Gullane.

Arrangements have been made with Dr MacDougall to advise members of the Society regarding insects or allied animals which, in any stage of their development, infest—

(*a*) Farm crops.
(*b*) Stored grain.
(*c*) Garden and greenhouse plants.
(*d*) Fruit and fruit trees.
(*e*) Forest trees and stored timber.
(*f*) Live stock (including poultry).

Members consulting Dr MacDougall should forward with their queries specimens of the injured plants, or the injured parts of plants, &c., as well as specimens of the insects or other animals believed to be the cause of the injury.

Specimens should be sent in tin or wooden boxes, or in quills, to prevent injury in transmission.

Letters and parcels (carriage or postage paid) should be addressed to R. Stewart MacDougall, Esq., M.A., D.Sc., Ivy Lodge, Gullane.

The Directors have fixed the fee payable by members to Dr MacDougall at 1s. for each case upon which he is consulted: this fee should be sent to him along with the application for information.

PREMIUMS OFFERED

1932

GROUP 1.—REPORTS.

GENERAL REGULATIONS.

1. It is to be distinctly understood that the Society is not responsible for the views, statements, or opinions of any of the writers whose papers are published in the 'Transactions.'

2. All reports must be legibly written, and on one side of the paper only; they must specify the number and subject of the Premium for which they are in competition; they must bear a distinguishing motto, and be accompanied by a sealed letter, similarly marked, containing the name and address of the reporter—initials must not be used.

3. No sealed letter, unless belonging to a report found entitled to the Premium offered, or a portion of it, will be opened without the author's consent.

4. Reports for which a Premium, or a portion of a Premium, has been awarded, become the property of the Society, and cannot be published in whole or in part, or circulated in any manner, without the consent of the Directors. All other papers will be returned to the authors if applied for within twelve months.

5. The Society is not bound to award the whole or any part of a Premium.

6. All reports must be of a practical character, containing the results of the writer's own observation or experiment, and the special conditions attached to each Premium must be strictly fulfilled. General essays, and papers compiled from books, will not be rewarded or accepted. Weights and measurements must be indicated by the imperial standards.

7. The Directors, before or after awarding a Premium, shall have power to require the writer of any report to verify the statements made in it.

8. The decisions of the Board of Directors are final and conclusive as to all matters relating to Premiums, whether for Reports or at General or District Shows; and it shall not be competent to raise any question or appeal touching such decisions before any other tribunal.

9. The Directors will welcome papers from any Contributor on any suitable subject, whether included in the Premium List or not; and if the topic and the treatment of it are both approved, the writer may be remunerated and his paper published.

SECTION 1.—THE SCIENCE AND PRACTICE OF AGRICULTURE.

FOR APPROVED REPORTS.

1. On any useful practice in Rural Economy adopted in other countries, and susceptible of being introduced with advantage into Scotland—The Gold Medal. To be lodged by 1st November in any year.

The purpose chiefly contemplated by the offer of this premium is to induce travellers to notice and record such particular practices as may seem calculated to benefit Scotland. The Report to be founded on personal observation.

2. Approved Reports on other suitable subjects. To be lodged by 1st November in any year.

SECTION 2.—ESTATE IMPROVEMENTS.

FOR APPROVED REPORTS.

1. By the Proprietor in Scotland who shall have executed the most judicious, successful, and extensive Improvement—The Gold Medal, or Ten Pounds. To be lodged by 1st November in any year.

Should the successful Report be written for the Proprietor by his resident factor or farm manager, a Minor Gold Medal will be awarded to the writer in addition to the Gold Medal to the Proprietor.

The merits of the Report will not be determined so much by the mere extent of the improvements, as by their character and relation to the size of the property. The improvements may comprise reclaiming, draining, enclosing, planting, road-making, building, and all other operations proper to landed estates. The period within which the operations may have been conducted is not limited, except that it must not exceed the term of the Reporter's proprietorship.

2. By the Proprietor or Tenant in Scotland who shall have reclaimed within the ten preceding years not less than forty

acres of Waste Land—The Gold Medal, or Ten Pounds. To be lodged by 1st November in any year.

3. By the Tenant in Scotland who shall have reclaimed within the ten preceding years not less than twenty acres of Waste Land—The Gold Medal, or Ten Pounds. To be lodged by 1st November in any year.

4. By the Tenant in Scotland who shall have reclaimed not less than ten acres within a similar period—The Medium Gold Medal, or Five Pounds. To be lodged by 1st November in any year.

The Reports in competition for Nos. 2, 3, and 4 may comprehend such general observations on the improvement of waste lands as the writer's experience may lead him to make, but must refer especially to the lands reclaimed—to the nature of the soil—the previous state and probable value of the subject—the obstacles opposed to its improvement—the details of the various operations—the mode of cultivation adopted—and the produce and value of the crops produced. As the required extent cannot be made up of different patches of land, the improvement must have relation to one subject; it must be of profitable character, and a rotation of crops must have been concluded before the date of the Report. *A detailed statement of the expenditure and return* and a certified measurement of the ground are requisite.

5. By the Proprietor or Tenant in Scotland who shall have improved within the ten preceding years the Pasturage of not less than thirty acres, by means of top-dressing, draining, or otherwise, without tillage, in situations where tillage may be inexpedient—The Gold Medal, or Ten Pounds. To be lodged by 1st November in any year.

6. By the Tenant in Scotland who shall have improved not less than ten acres within a similar period—The Minor Gold Medal. To be lodged by 1st November in any year.

Reports in competition for Nos. 5 and 6 must state the particular mode of management adopted, the substances applied, the elevation and nature of the soil, its previous natural products, and the changes produced.

SECTION 3.—HIGHLAND INDUSTRIES.

FOR APPROVED REPORTS.

1. The best mode of treating native Wool; cleaning, carding, dyeing, spinning, knitting, and weaving by hand in the Highlands and Islands of Scotland—Five Pounds. To be lodged by 1st November in any year.

SECTION 4.—MACHINERY.

FOR APPROVED REPORTS.

To be lodged by 1st November in any year.

SECTION 5.—FORESTRY.

FOR APPROVED REPORTS.

1. On Plantations of not less than eight years' standing formed on deep peat-bog—The Medium Gold Medal, or Five Pounds. To be lodged by 1st November in any year.

The premium is strictly applicable to deep peat or flow moss; the condition of the moss previous to planting, as well as at the date of the Report, should, if possible, be stated.

The Report must describe the mode and extent of the drainage, and the effect it has had in subsiding the moss—the trenching, levelling, or other preliminary operations that may have been performed on the surface—the mode of planting—kinds, sizes, and number of trees planted per acre—and their relative progress and value, as compared with plantations of a similar age and description grown on other soils in the vicinity.

GROUP II.—DISTRICT GRANTS.

APPLICATIONS.

Forms of Application may be obtained from the Secretary, 8 Eglinton Crescent, Edinburgh, which should be completed and returned on or before 1ST NOVEMBER next, in respect of a Grant commencing in the following year.

Note.—A Local Society, &c., desirous of renewing a particular class of Grant may not participate thereunder until the undernoted number of years have elapsed from the termination of the last Grant. Application may be made within those periods, however, for a Grant in any other class:—

Class.		Interval.
1.	Show Grant of £12 for Horses, Cattle, Sheep, and Pigs	4 years.
2.	Stallion Grant of £15	„
3.	Two Silver Medals in aid of Premiums	2 years.
4.	Special Grants	—
5.	Grant of £10 to Federations of S.W.R.I.	2 years.

1. GRANTS TO LOCAL SOCIETIES FOR HORSES, CATTLE, SHEEP, AND PIGS.

REGULATIONS, 1932.

1. CLASS OF STOCK—LIMIT OF GRANTS, £340.—The Highland and Agricultural Society will make Grants to Local Societies

for prizes for *Breeding Animals* in any of the following Classes of Stock, viz. :—

Cattle.

- Shorthorn.
- Aberdeen-Angus.
- Galloway.
- Belted Galloway.
- Highland.
- Ayrshire.
- British Friesian.
- Red Poll.
- Jersey.
- Shetland.

Pigs.

- Any Pure Breed.

Horses.

- Draught Horses.
- Hunters.
- Hackneys.
- Ponies.
- Shetland Ponies.

Sheep.

- Blackface.
- Cheviot.
- Border Leicester.
- Half-Bred.
- Shropshire.
- Oxford Down.
- Suffolk.
- Wensleydale.

Cross-bred [1] animals are not eligible. The Prizes must be confined to *Breeding* Animals ; " bullocks," " geldings," " wethers," and " hog pigs " are excluded.

2. All Competitions must be at the instance of a local Society. A Committee of Management shall be appointed, and either the Convener of the Committee or the Secretary of the Society **must be a Member of the Highland and Agricultural Society of Scotland.**

3. Grant to Society, £12.—The portion of the Grant to any one Local Society shall not exceed the sum of £12 in any one year.

4. Allocation of Grant.—The Grant from the Highland and Agricultural Society shall not be applied as a Grant in aid of the Premiums offered by the Local Society, but must be offered in the form of separate Prizes for the Animals chosen ; **and the Prizes must be announced in the Premium List and Catalogue of the Show as "given by the Highland and Agricultural Society of Scotland."**

5. Continuance of Grant—Three Years.—The Money Grant shall continue for three alternate years, provided always that the Local Society shall, in the two intermediate years, continue the competition by offering Premiums for the same class of Stock as that selected in each previous year to compete for the Highland and Agricultural Society's Prizes.

If no competition takes place for two consecutive years the Grant expires.

6. Medals in Intermediate Years.—In the two alternate years the Highland and Agricultural Society will place three Silver Medals at the disposal of each Local Society, for the same classes of Stock as those for which the Money Premiums are offered, provided that not less than three lots are exhibited in the same class.

7. When it is agreed to hold the General Show of the Society in any one of the Show Divisions, no provincial Show may be held in

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[1] *Exceptions to this rule may, however, be authorised by the Board of Directors, on application. The Directors are prepared to consider applications from local Societies which desire to use their grants, or part thereof, as prizes for cross-bred calves and one-year-old cross-bred cattle.*

that district in the **three months** immediately **preceding** the date of the General Show. **In the event of a Show being held, the entire grant to the Society will be cancelled.**

8. RULES OF COMPETITION.—The Rules of Competition for the Premiums, the funds for which are derived from Grants of the Highland and Agricultural Society, shall be such as are generally enforced by the Society receiving the Grant for Premiums offered by itself.

9. AREA AND PARISHES—FIVE PARISHES.—When making application for Grants from the Highland and Agricultural Society, the Local Society must delineate the area and the number of parishes comprised in the district, and, *except in special cases*, no Local Society shall be entitled to a Grant whose show is not open to at least *five* Parishes.

10. REPORTS. — Forms of Report will be furnished to the Secretaries of Local Societies. Both in the years when the Grant is offered and in the **two intermediate years,** detailed reports of the competition must be given on these Forms and lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Show, and in no case later than **1st November.** These reports are subject to the approval of the Directors of the Highland and Agricultural Society, against whose decision there shall be no appeal. All Reports must be signed and certified as marked on the Form. The Grant will lapse if no Report is lodged.

11. GRANTS—WHEN PAID.—The Grants made to Local Societies will be paid in December after the Reports of the awards of the prizes have been received and found to be in order and passed by the Board of Directors, the Money Grants being paid to the Secretaries of the Local Societies and the Medals sent direct to the winners. *The Secretary of the Local Society must not on any condition whatever pay any premium offered by the Highland and Agricultural Society until he has been informed that the awards are in order and has received the Grant from the Highland and Agricultural Society.*

12. RENEWAL OF GRANT. — No application for renewal of a Money Grant to a Local Society will be entertained until the expiration of *four years* from the termination of the last Grant.

13. DISPOSAL OF APPLICATIONS.—In disposing of applications for District Grants, the Directors of the Highland and Agricultural Society shall keep in view the length of interval that has elapsed since the expiration of the last Grant, giving priority to those Local Societies which have been longest off the list.

Grants in 1932.

Final (Alternate) Year—MONEY GRANT.

1. UNITED EAST LOTHIAN AGRICULTURAL SOCIETY.
   Convener—A. G. Spence, Longyester, Gifford.
   Secretary—William Burnet, Solicitor, Haddington.
   Granted 1926. (In abeyance 1927, on account of Edinburgh Show; in abeyance 1931, on account of Hundredth Show, Edinburgh.)

*2. CLACKMANNANSHIRE UNION AGRICULTURAL SOCIETY.
Convener—Robert M'Gee, Blackfaulds, Alloa.
Hon. Secretary—G. F. Piggott, Union Street, Alloa.
Granted 1927. (In abeyance 1929, on account of Alloa Show.)

3. DALBEATTIE AGRICULTURAL SOCIETY.
Convener—Major Wellwood Maxwell of Kirkennan, Dalbeattie.
Secretary—J. E. Milligan, The Clydesdale Bank, Dalbeattie.
Granted 1928.

*4. MEIKLEOUR AND DISTRICT AGRICULTURAL ASSOCIATION.
Convener—James M. Anderson, Balbrogie, Coupar-Angus.
Secretary—John Leggat, Meikleour, Perth.
Granted 1928.

4th (Intermediate) Year—3 SILVER MEDALS.

*5. STRATHBOGIE FARMER CLUB.
Convener—James M. Anderson, Auchaber, Forgue.
Secretary—John Stuart, Commercial Bank Buildings, Huntly.
Granted 1927. (In abeyance 1928 and 1929—not awarded.)

*6. BATHGATE AGRICULTURAL SOCIETY.
Convener—Frank Dawson, Wester Drumcross, Bathgate.
Secretary—William Renton, Furbar, Armadale.
Granted 1928. (In abeyance 1929—not awarded.)

7. CROMAR, UPPER DEE AND DONSIDE AGRICULTURAL ASSOCIATION.
Convener—Charles Strachan, Tillyorn, Corse, Lumphanan.
Secretary—William Anderson, Home Farm, Hopewell, Tarland.
Granted 1929.

8. MONKWOOD AND MINISHANT DISTRICT SOCIETY.
Convener—John Tweedily, 17 St Leonard's Road, Ayr.
Hon. Secretary and Treasurer—Walter Gardner, M.R.C.V.S., Woodside, Maybole.
Granted 1929.

9. MOUNT BLAIR AGRICULTURAL SOCIETY.
Convener—James M'L. Marshall, Bleaton Hallet, Blairgowrie.
Secretary—Alexander F. M'Intosh, Dunay, Blacklunans, Blairgowrie.
Granted 1929.

*10. FORMARTINE AGRICULTURAL ASSOCIATION.
Convener—John L. Sleigh, Tolquhoun, Tarves.
Joint-Secretaries—Alfred Marr and David S. Minto, Ardmore, Udny.
Granted 1929.

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* *See also under Special Grants, p.* 77.

3rd (Alternate) Year—MONEY GRANT.

11. ANNAN AND DISTRICT AGRICULTURAL SOCIETY.
Convener—John Roddick of Greenbank, Annan.
Secretary—James Risk, Kinmount Estate Office, Annan.
Granted 1928. (In abeyance 1930, on account of Dumfries Show; in abeyance 1931—Show abandoned on account of Foot-and-Mouth Disease Order.)

12. MOFFAT AND UPPER ANNANDALE AGRICULTURAL AND HORTICULTURAL SOCIETY.
Convener—C. C. Hyslop, Milton of Dryfe, Lockerbie.
Secretary—John H. Edgar, Beech Cottage, Moffat.
Granted 1928. (In abeyance 1928 and 1931—No Show held.)

13. LOCKERBIE AGRICULTURAL SOCIETY.
Convener—R. Jardine Paterson, Balgray, Lockerbie.
Secretary—Thomas Henderson, Solicitor, Lockerbie.
Granted 1929. (In abeyance 1930, on account of Dumfries Show.)

14. KENNETHMONT AGRICULTURAL ASSOCIATION.
Convener—Charles E. N. Leith-Hay, Leith Hall, Kennethmont.
Secretary—John M. Reid, Ardlair Farm, Kennethmont.
Granted 1930.

15. MAR AGRICULTURAL ASSOCIATION.
Convener—George Abel, East Leylodge, Kintore.
Secretaries and Treasurers—W. S. and P. Morrison, Blackchambers, Kinellar.
Granted 1930.

16. UPPER DEESIDE AGRICULTURAL ASSOCIATION.
Convener—Robert Carr, Balnacraig, Banchory.
Secretary—George J. Wilson, The Bank House, Torphins.
Granted 1930.

17. MID-ARGYLL AGRICULTURAL SOCIETY.
Convener—James R. Carmichael, Invershuna, Lochgilphead.
Secretary—Neil L. M'Vicar, Poltalloch Estate Office, Kilmartin.
Granted 1930.

18. DUNBARTONSHIRE AGRICULTURAL SOCIETY.
Chairman—A. Y. Allan, Aitkenbar, Dumbarton.
Secretary—George Lawrence, Union Bank of Scotland, Ltd., Dumbarton.
Granted 1930.

19. GATEHOUSE DISTRICT AGRICULTURAL SOCIETY.
Convener—Neil J. W. H. Murray-Usher, Cally, Gatehouse-of-Fleet.
Secretary—Thomas Mackenzie, Cally Mains, Gatehouse-of-Fleet.
Granted 1930.

20. CARNWATH AGRICULTURAL SOCIETY.
Convener—Andrew S. Lawson, Guildhouse, Forth.
Secretary and Treasurer—J. D. Mackintosh, Commercial Bank of Scotland Ltd., Carnwath.
Granted 1930.

21. Spey, Aven and Fiddichside Farmer Club.
Convener—George Grant, Glenfarclas, Blacksboat.
Secretary—R. Dick Stuart, Seafield Square, Rothes.
Granted 1930.

2nd (Intermediate) Year—3 SILVER MEDALS.

22. Girvan District Agricultural Society.
Convener—William K. Bone, Shalloch Park, Girvan.
Secretary—Miss J. W. Kennedy, Town Clerk's Chambers, Girvan.
Granted 1930. (In abeyance 1931—No Show held.)

23. Dalkeith Agricultural Society.
Convener—John M. M'Kean, Upper Dalhousie, Bonnyrigg.
Secretary—William Carnegie, Auction Mart, Dalkeith.
Granted 1930. (In abeyance 1931, on account of Hundredth Show, Edinburgh.)

24. Buchlyvie and Gartmore Agricultural Association.
Convener—James Stewart, Cashley, Buchlyvie.
Secretary—D. J. Muirhead, Wester Amgibbon, by Kippen.
Granted 1930. (In abeyance 1931—Show abandoned on account of Foot-and-Mouth Disease Order.)

25. Gargunnock Farmers' Club.
Convener—John Risk, Culmore, Kippen Station.
Secretary—James Risk, Culmore, Kippen Station.
Granted 1930. (In abeyance 1931.)

26. Upper Donside Agricultural Society.
Convener—John W. Spence, Edinbanchory, Lumsden.
Secretary—Alexander Kellas, Hillockhead, Cushnie, by Alford.
Granted 1931.

27. Latheron Landholders' Show Society.
Convener—John A. Mowat, Nottingham Farm, Latheron, Caithness.
Secretary—A. G. Doull, Lybster, Caithness.
Granted 1931.

28. South Uist and Benbecula Cattle Show Society.
Convener—Dr Bartlett, Sorelle Lodge, Benbecula.
Secretary—J. Shearer, Commercial Bank of Scotland Ltd., Lochboisdale, South Uist.
Granted 1931.

*29. Dunblane Agricultural Society.
Convener—A. H. Anderson, The Firs, Dunblane.
Secretary and Treasurer—John Stewart, Solicitor, Dunblane.
Granted 1931.

30. Border Union Agricultural Society.
Convener—J. Hastie Brydon, Haddon, Kelso.
Secretary—J. S. Roberton, Yetholm Mains, Kelso.
Granted 1931.

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* *See also under Special Grants, p.* 77.

1st (Alternate) Year—MONEY GRANT.

31. LAMMERMOOR PASTORAL SOCIETY.
Convener—Walter Elliot, Harehead, Duns.
Hon. Secretary—Thomas Stephenson, Duns.
Granted 1931. (In abeyance 1931.)

32. KINGLASSIE AGRICULTURAL SOCIETY.
Convener—Thomas Alston, Ingrie, Leslie.
Secretary and Treasurer—D. Mackenzie, Commercial Bank of Scotland Ltd., Thornton, Fife.
Granted 1931. (In abeyance 1931—Show abandoned on account of Foot-and-Mouth Disease Order.)

33. TIREE AGRICULTURAL SHOW SOCIETY.
Convener—Malcolm M'Lean, Kirkapol Farm, Tiree.
Secretary—William G. Macdiarmid, Island House, Tiree.
Granted 1932.

34. ESKDALE AND LIDDESDALE AGRICULTURAL AND PASTORAL SOCIETY.
Convener—Captain Walter D. Elliot of Dumfedling, Eskdalemuir.
Secretary—James Fairful, 56A Henry Street, Langholm.
Granted 1932.

35. NITHSDALE AGRICULTURAL SOCIETY.
Convener—Charles W. Ralston, Dabton, Thornhill, Dumfriesshire.
Secretary—W. M. Henderson, Solicitor, Thornhill, Dumfriesshire.
Granted 1932.

36. SANQUHAR FARMERS' SOCIETY.
Convener—James Hunter, Carco, Sanquhar.
Secretary—W. M. Henderson, Solicitor, Sanquhar.
Granted 1932.

37. SKYE AGRICULTURAL SOCIETY.
Convener—Colonel K. L. Macdonald, D.S.O., Tote, Portree.
Secretary—Malcolm MacAulay, D.O.A.S. Estates Office, Portree.
Granted 1932.

38. KINCARDINESHIRE FARMERS' CLUB.
Convener—A. E. Argo, Cheyne, Stonehaven.
Secretary—James B. Connon, Solicitor, Stonehaven.
Granted 1932.

39. STRATHAVEN AND DISTRICT AGRICULTURAL EXPOSITION.
Convener—Peter Meikle, M.R.C.V.S., Avonholme, Strathaven.
Secretary—Alexander O. Jennings, 67 Kirkland Park Avenue, Strathaven.
Granted 1932.

40. MORAYSHIRE FARMER CLUB.
Convener—James P. Brown, Dipple, Fochabers.
Secretary—W. Rose Black, Solicitor, Elgin.
Granted 1932.

41. West Linton Agricultural Society.
Convener—Captain R. J. Thomson of Kaims, West Linton.
Secretary—William Forbes, Bank Chambers, West Linton.
Granted 1932.

42. Doune Agricultural Association.
Convener—R. W. Fairweather, Park House, Blair-Drummond, by Stirling.
Secretary—A. Mitchell Holmes, Deanston Farm, Doune.
Granted 1932.

43. Wigtown Agricultural Society.
President—Sir Herbert E. Maxwell of Monreith, Bart., D.C.L., LL.D., F.R.S., Monreith, Whauphill.
Secretary—Gavin Coupland, The Clydesdale Bank, Newton-Stewart.
Granted 1932.

In Abeyance 1932, on account of Inverness Show.

None.

2. GRANTS TO HORSE ASSOCIATIONS, &c., FOR STALLIONS FOR AGRICULTURAL PURPOSES.

Regulations, 1932.

1. The Highland and Agricultural Society will make Grants to Horse Associations and other Societies in different districts engaging Stallions for agricultural purposes. The total sum expended by the Highland and Agricultural Society in such Grants shall not exceed the sum of £210 in any one year.

2. The portion of the Grant to any one Association or Society shall not exceed the sum of £15 in any one year. The Grant shall be used as a Premium, or part of a Premium, to be paid by the Association to the owner of the Stallion engaged.

3. The Grant will be available only for Stallions which, for the year to which the Grant applies, are registered in the Register of Certified Draught Stallions published by the Department of Agriculture for Scotland. (For information regarding the Registration of Stallions, apply to the Secretary of the Department of Agriculture for Scotland, York Buildings, Queen Street, Edinburgh.)

4. The Grant will continue for three years provided the Association receiving the Grant shall hire a Registered Stallion in the two intermediate years.

5. In the event of a Horse not being engaged in any one year while the provisions of the Grant are in force, the Grant made by the Highland and Agricultural Society will cease.

6. Rules 2 (Committee and Convener), 10 (Reports), 11 (Time of Payment), 12 (Renewal of Grant), and 13 (Disposal of Applications) applicable to Section 1, shall be applicable to this Section.

Grants in 1932.

Final (Alternate) Year—MONEY GRANT.

1. SOUTH DEESIDE STOCK IMPROVEMENT SOCIETY.
Convener—George Jamieson, Burnside, Netherley, Stonehaven.
Secretary—John Duncan, Craiglug Cottage, Durris.
Granted 1928.

4th (Intermediate) Year—Grant in Abeyance.

2. NAIRNSHIRE FARMING SOCIETY.
Convener—Joseph Mackay, Glebe End, Nairn.
Secretary—A. J. MacKintosh, St Colms, Auldearn, Nairn.
Granted 1929.

3. ROUSAY AGRICULTURAL HORSE-BREEDING SOCIETY.
Convener—John Craigie, Furse, Rousay, Orkney.
Secretary—John Linklater, Westness, Rousay, Orkney.
Granted 1929.

4. SELKIRK AND GALASHIELS AGRICULTURAL SOCIETY.
Convener—William Dodds, Clarilaw, Lilliesleaf.
Secretary—John Hendrie, The Yair, Galashiels.
Granted 1929.

5. SCOTTISH CENTRAL HORSE-BREEDING ASSOCIATION.
Convener—James Stewart, Cashley, Buchlyvie.
Secretary and Treasurer—Thomas M'Lay, Muirlands, Causewayhead, Stirling.
Granted 1929.

3rd (Alternate) Year—MONEY GRANT.

6. MID-ARGYLL AGRICULTURAL SOCIETY.
Convener—J. G. Mathieson, Ri-Cruin, Kilmartin.
Secretary—Neil L. M'Vicar, Poltalloch Estate Office, Kilmartin.
Granted 1930.

7. UPPERWARD OF LANARKSHIRE AGRICULTURAL ASSOCIATION.
Convener—Andrew S. Lawson, Guildhouse, Forth.
Secretary—Robert Pate, Royal Bank of Scotland, Lanark.
Granted 1930.

8. SPEY, AVEN AND FIDDICHSIDE FARMER CLUB.
Convener—George Grant, Glenfarclas, Blacksboat.
Secretary—R. Dick Stuart, Seafield Square, Rothes.
Granted 1930.

9. STIRLING DISTRICT CLYDESDALE HORSE SOCIETY.
Convener—James More, Woodyett, Gargunnock.
Secretary—Alexander Paterson, Solicitor, Stirling.
Granted 1930.

2nd (Intermediate) Year—Grant in Abeyance.

10. MORAYSHIRE CLYDESDALE HORSE-BREEDING ASSOCIATION.
Convener—John Robertson, Brodieshill, Alves.
Secretary—William Thomson, 149 High Street, Elgin.
Granted 1930. (In abeyance 1930—Grant postponed.)

11. ISLAY SMALL LANDHOLDERS' SOCIETY.
Convener—John G. Morrison of Islay, Islay House, Islay.
Secretary—Iain M. Mactaggart, Bowmore, Islay.
Granted 1931.

12. DEESIDE STOCK IMPROVEMENT SOCIETY.
Convener—William Adam, Bush, Banchory-Ternan.
Secretary—Peter Ross, Barns of Durris, Crathes.
Granted 1931.

13. STONEHAVEN DISTRICT HORSE-BREEDING ASSOCIATION.
President—William C. Mitchell, Nether Quithel, Drumlithie.
Secretary—James B. Connon, Solicitor, Stonehaven.
Granted 1931.

14. STRATHSPEY FARMERS' CLUB.
Convener—D. M. Allan, Ballintomb, Grantown-on-Spey.
Secretary—John G. MacDougall, Dunollie, Grantown-on-Spey.
Granted 1931.

15. SHAPANSAY AGRICULTURAL ASSOCIATION.
Convener—William T. Wood, Balfour Mains, Shapansay, Orkney.
Secretary—D. L. Kemp, Gatehouse, Shapansay, Orkney.
Granted 1931.

1st (Alternate) Year—MONEY GRANT.

16. SANDAY AGRICULTURAL ASSOCIATION.
Convener—W. Cowper Ward, Scar House, Sanday, Orkney.
Secretary—John Wallace, Prattsfauld, Sanday, Orkney.
Granted 1931. (In abeyance 1931—Grant postponed.)

17. UPPER DONSIDE AGRICULTURAL SOCIETY.
Convener—John W. Spence, Edinbanchory, Lumsden.
Secretary—Alexander Kellas, Hillockhead, Cushnie, by Alford.
Granted 1932.

18. UPPER NITHSDALE HORSE SOCIETY.
Convener—Charles W. Ralston, Dabton, Thornhill, Dumfriesshire.
Secretary—W. M. Henderson, Solicitor, Thornhill, Dumfriesshire.
Granted 1932.

19. DUNFERMLINE AND WEST FIFE CLYDESDALE ENTIRE HORSE SOCIETY.
Convener—Robert Jeffrey, Drumfin, Torryburn.
Secretary—A. J. Auchterlonie, Leckerstone, Dunfermline.
Granted 1932.

20. HOWE O' THE MEARNS HORSE-BREEDING SOCIETY.
Convener—James Anderson, Pitcarry, Bervie.
Secretary—Alexander Anderson, Burnton, Laurencekirk.
Granted 1932.

21. KINROSS-SHIRE AGRICULTURAL SOCIETY.
Convener—Robert M. Reid, Tillyrie, Milnathort.
Hon. Secretary—J. A. Hepburn, M.R.C.V.S., Ardmohr, Milnathort.
Granted 1932.

22. MORAY STOCK IMPROVEMENT SOCIETY.
President—George Douglas of Calcots, Elgin.
Secretary—W. Rose Black, Solicitor, Elgin.
Granted 1932.

23. SOUTH RONALDSHAY AND BURRAY HORSE-BREEDING AND STOCK IMPROVEMENT SOCIETY.
Convener—John Tomison, Halcro, South Ronaldshay, Orkney.
Secretary—George A. Ryrie, Hall of Herston, South Ronaldshay, Orkney.
Granted 1932.

3. MEDALS IN AID OF PREMIUMS GIVEN BY LOCAL SOCIETIES.

REGULATIONS, 1932.

The Society, being anxious to co-operate with local Societies, will give a limited number of Silver Medals annually to Societies, not on the list of Cattle, Horse, or Sheep Premiums, in addition to the Money Premiums awarded in the Districts, for—

1. Best Bull, Cow, or Heifer of any pure breed included in Section 1.
2. Best Stallion or Mare of any pure breed included in Section 1.
3. Best Tup or Pen of Ewes of any pure breed included in Section 1.
4. Best Boar, Sow, or Breeding Pig of any pure breed.
5. Best Pens of Poultry.
6. Best Sample of any variety of Wool.
7. Best Sample of any variety of Seeds.
8. Best managed Farm.
9. Best managed Green Crop.
10. Best managed Hay Crop.
11. Best managed Dairy.
12. Best Sweet-Milk Cheese.
13. Best Cured Butter.
14. Best Fresh Butter.
15. Best collection of Roots.
16. Best kept Fences.
17. Best Sheep-Shearer.
18. Most expert Hedge-Cutter.
19. Most expert Labourer at Draining.
20. Best Maker of Oatcakes.

It is left to the local Society to choose out of the foregoing list the classes for which the Medals are to be competed.

RULES OF COMPETITION.

1. All Competitions must be at the instance of a local Society.

2. The classes for which Medals are granted must be in accordance with the foregoing list. The Local Committee shall select the classes, and specify them in the Report.

3. The Medals are granted for two years, and lapse if not awarded in those years.

4. No Society shall receive more than two Medals in any year.

5. A Committee of Management shall be appointed, and either the Convener of the Committee or the Secretary of the Society **must be a member of the Highland and Agricultural Society of Scotland.**

6. When it is agreed to hold the General Show of the Society in any one of the Show Divisions, no provincial Show may be held in that district in the **three months** immediately **preceding** the date of the General Show. **In the event of a Show being held, the entire grant will be cancelled.**

7. The Money Premiums given in the District must be not less than £2 for each Medal claimed.

8. The Medal for Sheep-Shearing shall always accompany the highest Money Premium.

9. There must not be fewer than three competitors in all the classes.

10. Regarding Reports and despatch of Medals, Rules 10 and 11, Section 1, will apply.

11. When a grant of Medals has expired, the Society cannot apply again for Medals for two years.

Grants in 1932.

2nd Year.

1. OBAN POULTRY, PIGEON AND CAGE BIRD SOCIETY.
President—Allan B. M'Killop, 12 High Street, Oban.
Hon. Secretary—N. A. Paterson, 34 Stevenson Street, Oban.
Granted 1931. (2 Medals.)

2. ROTHIENORMAN AUTUMN EXHIBITION SOCIETY.
Convener—James Durno, Rothiebrisbane, Fyvie.
Secretary—Andrew Buchan, Middlehill, Rothienorman.
Granted 1931. (2 Medals.)

1st Year.

3. CUMBERNAULD AGRICULTURAL SOCIETY.
Convener—A. Elrick Gray, Easter Dullatur House, Dullatur.
Secretary—John Longwill, District Council Offices, Cumbernauld.
Granted 1932. (2 Medals.)

4. MOULIN AGRICULTURAL ASSOCIATION.
Convener—Alexander Blair Stewart of Balnakeilly, Pitlochry.
Secretary—Buckham W. Liddell, W.S., Pitlochry.
Granted 1932. (2 Medals.)

5. ROUSAY AGRICULTURAL SOCIETY.
Convener—Robert S. Mainland, Westness Farm, Rousay, Orkney.
Secretary—John Linklater, Westness, Rousay, Orkney.
Granted 1932. (2 Medals.)

4. SPECIAL GRANTS—1932.

(1) ANNUAL.

1. £20 to the AYRSHIRE AGRICULTURAL ASSOCIATION, to be competed for at the Dairy Produce Show at Kilmarnock.
   Chairman of Directors—Colonel W. T. R. Houldsworth of Kirkbride, Maybole.
   Secretary—John Howie, 58 Alloway Street, Ayr.
   Granted 1872.

2. THE BRITISH DAIRYMAIDS' ASSOCIATION.
   Hon. President—Miss M. D. Mitchell. Langlees, Biggar.
   Secretary—Miss J. Macdonald, 16 Rutland Square, Edinburgh.
   1 Minor Gold Medal and 1 Medium Silver Medal for Champion Buttermaking Competitions.
   Granted 1908.

3. £20 to the NORTHERN ARTS AND CRAFTS SOCIETY.
   Convener—Miss Mary Mackintosh, Raigmore, Inverness.
   Joint-Secretaries—Mrs Mitford, Berryfield, Lentran, and Miss Ruth Mackintosh, Raigmore, Inverness.
   Granted 1922.

4. THE NORTH OF SCOTLAND COLLEGE OF AGRICULTURE.
   Secretary—A. A. Prosser, Crown Mansions, 41½ Union Street, Aberdeen.
   3 Silver Medals (1 Large, 1 Medium and 1 Minor)—1st, 2nd and 3rd Prizes respectively—for *Sir John Fleming Cup* Stackyard Competition.
   Granted 1925.

5. THE SCOTTISH NATIONAL UNION OF ALLOTMENT HOLDERS.
   Secretary and Treasurer—Archibald W. Fisher, Solicitor, 18 Hill Street, Edinburgh.
   £8 and 8 Medium Silver Medals for best Allotments.
   Granted 1927.

(2) IN ALTERNATE YEARS.—GRANTS IN 1932.

6. £3 to ROUSAY AGRICULTURAL SOCIETY, ORKNEY.
   Convener—Robert S. Mainland, Westness Farm, Rousay, Orkney.
   Secretary—John Linklater, Westness, Rousay, Orkney.
   Granted 1903.

7. £3 to SOUTH RONALDSHAY AND BURRAY AGRICULTURAL SOCIETY, ORKNEY.
   Convener—John Tomison, Halcro, St Margaret's Hope, Orkney.
   Secretary—George Esson, St Margaret's Hope, Orkney.
   Granted 1904.

(3) In Alternate Years.—Grants in Abeyance, 1932.

8. £3 to **Orkney Agricultural Society.**
Convener—James R. Hourston, Waterfield, Kirkwall.
Joint-Secretaries—D. Flett and J. C. Croy, Junction Road, Kirkwall.
Granted 1883.

9. £3 to **East Mainland Agricultural Society, Orkney.**
Convener—James G. Skea, Barns of Ayre, Deerness, Orkney.
Secretary—Alfred C. Tait, Quoyburray, Tankerness, Orkney.
Granted 1898.

10. £3 to **West Mainland Agricultural Society, Orkney.**
Convener—William Corrigall, North Bigging, Harray, Kirkwall.
Secretary—James Wood, Garson Quoyloo, Sandwick, Orkney.
Granted 1900.

11. £3 to **Sanday Agricultural Association, Orkney.**
Convener—W. Cowper Ward, Scar House, Sanday, Orkney.
Secretary—John Wallace, Prattsfauld, Sanday, Orkney.
Granted 1902.

12. £3 to **Yell Agricultural Society, Shetland.**
Convener—T. R. Manson, Ladybank, Westsandwick, Lerwick.
Secretary—Robert Johnson, The Manse, Westsandwick, Lerwick.
Granted 1931.

(4) Premiums unawarded in 1931 offered in 1932.

The Cattle, Sheep, Goat and Pig Classes at the Shows held by the undernoted Societies, &c., in 1931, *were cancelled on account of the restrictions imposed by a Foot-and-Mouth Disease Order of the Ministry of Agriculture. The unawarded premiums offered at the Shows of* 1931, *in respect of these Classes, have been made available for* 1932, *as follows* :—

Ardoch Agricultural Society	£4	10	0
Convener—H. Adam, 4 Queen Street, Stirling.			
Secretary—James Forbes, Al Arish, Braco.			
*Strathbogie Farmer Club	10	0	0
*Bathgate Agricultural Society	6	0	0
*Formartine Agricultural Society	9	0	0
*Dunblane Agricultural Society	6	0	0
	£35	10	0

*Clackmannanshire Union Agricultural Society .	3 Medals.
*Meikleour and District Agricultural Association	1 Medal.
Shotts Calderwaterhead Farmers' Society . .	1 Medal.
Convener—John Weir, Shottsburn, Salsburgh.	
Secretary—Thomas Sommerville, 47 Bon-Accord Crescent, Shotts.	

* *See also under Section I. as to normal grant for* 1932.

5. SCOTTISH WOMEN'S RURAL INSTITUTES.

Regulations, 1932.

1. A sum not exceeding £150 in each year will be given in special Grants to Federations of Scottish Women's Rural Institutes. The amount of any one Grant shall not exceed £10 in any one year.

2. A Federation which has received a Grant for two consecutive years shall not be eligible to again apply until after the expiry of two years.

Grants in 1932.

2nd Year.

1. Aberdeen County Federation.
   Convener—Mrs Moir-Byres, Tonley, Whitehouse.
   Secretary—Miss A. Henderson, 25 Crown Street, Aberdeen.
   Granted 1930. (Grant postponed for 1931.)
2. Ayrshire Federation.
   Convener—Mrs Kennedy, Doonholm, Ayr.
   Hon. Secretary—Miss Montgomerie, M.B.E., Dalmore, Stair, by Tarbolton.
   Granted 1931.
3. Banffshire Federation.
   Convener—Mrs Gordon, Buchromb, Dufftown.
   Organising Secretary—Miss M. H. Innes, Tormore House, Cornhill, Banffshire.
   Granted 1931.
4. Berwickshire Federation.
   Convener—Miss E. H. Jardine, Reston House, Reston.
   Hon. Secretary—Miss M. A. Darling, Stoneshiel, Reston.
   Granted 1931.
5. Midlothian Federation.
   Convener—Mrs Stuart, Borthwick Castle, Gorebridge.
   Hon. Secretary—Miss N. Scott Muir, 7 Barnton Gardens, Davidson's Mains.
   Granted 1931.
6. Ross and Cromarty Federation.
   Convener—The Lady Marjory Mackenzie of Gairloch, C.B.E., Conan House, Conon-Bridge.
   Hon. Secretary—Mrs D. M. Ross, East House, Portmahomack.
   Granted 1931.
7. Stewartry of Kirkcudbright Federation.
   Convener—Miss Montgomery, Nether Hall, Castle Douglas.
   Show Secretary—Mrs M. S. Nodwell, Victoria Inn, Dumfries.
   Granted 1931.
8. Stirling and West Perth Federation.
   Convener—Mrs Macdiarmid, Oakbank, Kippen.
   Hon. Secretary—Miss M. Y. Mackay, East Plean, Bannockburn.
   Granted 1931. (Grant postponed for 1931.—Show at which Exhibition staged abandoned on account of Foot-and-Mouth Disease Order.)

9. **Wigtownshire Federation.**
Convener—Mrs Graham, Monreith House, Whauphill.
Hon. Secretary—Miss Sowerby-Niven, Fairview, Sorbie.
Granted 1931.

1st Year.

10. **Arran, Isle of, Federation.**
Convener—Mrs Stewart Orr, Corrie House, Corrie, Isle of Arran.
Secretary—Mrs Sillars, St Bride's, Lamlash.
Granted 1932.

11. **Bute Federation.**
Convener—Mrs Constable, The Foley, Rothesay.
Secretary—Miss M. Gray Buchanan, Ettrickdale, Port Bannatyne.
Granted 1932.

12. **Fife Federation.**
Convener—Miss L. J. Rintoul, Lahill, Largo.
Secretary—Miss A. G. Balfour, Balbirnie, Markinch.
Granted 1932.

13. **Forfarshire Federation.**
Convener—Mrs Babington, The Manse, Glamis.
Secretary—Miss M. C. M'Farlane, Mains of Careston, Brechin.
Granted 1932.

14. **Roxburghshire Federation.**
Convener—Lady Biddulph, The Pavilion, Melrose.
Hon. Secretary—Mrs Jamieson, The Lodge, Langshaw, Galashiels.
Granted 1932.

GROUP III.—COTTAGES AND GARDENS, &c.

The following Premiums are offered for Competition.
The Premiums are granted for two years.

1. PREMIUMS FOR BEST KEPT COTTAGES AND GARDENS.

1.	Best kept Cottage	£1	0	0
	Second best	0	10	0
2.	Best kept Cottage Garden	1	0	0
	Second best	0	10	0

Forms of application may be obtained from the Secretary, and should be completed and returned on or before 1st November next, in respect of a Grant commencing in the following year.

RULES OF COMPETITION.

1. Competitions may take place in the different parishes for Cottages and Gardens, or for either separately.

2. The occupiers of Lodges at Gentlemen's Approach Gates and Gardeners' Houses are excluded, as well as others whom the Committee consider, from their position, not to be entitled to compete. The inspection must be completed by the 1st of October. In making

the inspection, the Conveners may take the assistance of any competent judges.

3. It shall be left to the Committee in the District to fix two grades of Cottages, with maximum rents of £6 and £15 respectively, and to apply for £3 Grants in respect of each.

4. To warrant the award of full Premiums, there must not be fewer than three Competitors in each class. If there are less than three competitors in each class, only half Premium will be awarded.

5. A person who has gained the highest Premium cannot compete again.

6. If the Cottage is occupied by the proprietor, the roof must be in good repair ; if the roof is thatch, it must be in good repair, though in the occupation of a tenant. The interior and external conveniences must be clean and orderly ; the windows must be free of broken glass, clean, and affording the means of ventilation. Dunghills, and all other nuisances, must be removed from the front and gables. In awarding the Cottage Premiums, preference will be given to Competitors who, in addition to the above requisites, have displayed the greatest taste in ornamenting the exterior of their houses, and the ground in front and at the gables.

7. In estimating the claims for the Garden Premiums, the judges should have in view—the sufficiency and neatness of the fences and walks ; the cleanness of the ground ; the quality and choice of the crops ; and the general productiveness of the garden.

8. Reports, stating the number of Competitors, the names of successful parties, and the nature of the exertions which have been made by them, must be lodged with the Secretary of the Highland and Agricultural Society *on or before the 1st November next.*

9. When a grant of Money has expired, the District cannot apply again for aid for four years.

Grants in 1932.

1st Year.

1. Ceres Flower Show Society.

President—Miss Sharp, Hill of Tarvit, Cupar.
Secretary—Mrs R. Howie, Main Street, Ceres, Cupar.
Granted 1932.

2. MEDALS FOR BEST KEPT COTTAGES AND GARDENS, GARDEN PRODUCE, POULTRY, AND BEE-KEEPING.

Regulations.

1. The Society will give annually one or two Minor Silver Medals to a limited number of local Associations or individuals, who establish Competitions and Premiums for Cottages, Gardens, Garden Produce, or Bee-Keeping. The Medals will be granted for two years.

2. The Medals may be offered in any two of the following sections, *but under no circumstances will the two Medals be given in one of the sections :—*

(1) Best kept Cottage or best kept Cottage and Garden. (One Medal only.)
(2) Best kept Garden. (One Medal only.)
(3) Best Collection of Garden Produce—Flowers excluded. (One Medal only.)

(4) Best Pen of Poultry. (One Medal only.)
(5) Honey. (One Medal only.)

3. The annual value of each cottage, with the ground occupied in the parish by a Competitor, must not exceed £20. The occupiers of Lodges at Gentlemen's Approach Gates, and Gardeners in the employment of others, are not entitled to compete.

4. If Competition takes place for Garden Produce, such produce must be *bona fide* grown in the Exhibitor's Garden. He will not be allowed to make up a collection from any other Garden. The produce must consist of Vegetables, or Vegetables and Fruit (not Fruit alone). Flowers are excluded.

5. The Honey must be the produce of the Exhibitor's own Hives.

6. To warrant the award of a Medal, there must not be fewer than three Competitors.

7. Forms of Report of Competitions will be furnished to the Secretaries in the different Districts. These must, in all details, be completed and lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Competition, and in no case later than 1*st November*, for the approval of the Directors, against whose decisions there shall be no appeal.

8. If no Competition takes place in a District for two years the grant expires.

9. When a grant of Medals has expired, the District cannot apply again for aid for two years.

Grants in 1932.

1st Year.

1. CERES FLOWER SHOW SOCIETY.
President—Miss Sharp, Hill of Tarvit, Cupar.
Secretary—Mrs R. Howie, Main Street, Ceres, Cupar.
Granted 1932. (1 Medal.)

GROUP IV.—PLOUGHING, HOEING, AND LONG SERVICE.

1. MEDALS FOR PLOUGHING COMPETITIONS.

The Ploughing Medal will be given to the winner of the first Premium at Ploughing Competitions, provided a Report in the following terms on the official form is made to the Secretary, within one month of the Competition, by a Member of the Society. Forms of Report to be had on application.

FORM OF REPORT.

I, of , Member of the Highland and Agricultural Society, hereby certify that I attended the Ploughing Match of the Association at in the county of on the when ploughs competed; of land were assigned to each, and hours were allowed for the execution of the work. The sum of £ was awarded as follows:—

[*Here enumerate the names and designations of successful Competitors.*]

RULES OF COMPETITION.

1. All Matches must be at the instance of a local Society or Ploughing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.

2. The title of such Society or Association, together with the name and address of its Secretary, must be registered with the Secretary of the Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh.

3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.

4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.

5. A Member can report only one Match; and a Ploughman cannot carry more than three Medals in the same season.

6. To warrant the grant of the Medal, there must have been 12 Ploughs in actual competition for the medal (*i.e. in the particular class for which the medal was offered*) and not less than £3 awarded in Prizes by the Local Society. The Medal to be given to the winner of the first prize.

7. The Local Society or Ploughing Association shall decide what class of ploughs shall compete for the Medal, and if so agreed, may offer it for competition to the class of plough most generally in use in the district.

8. The Local Society or Committee may, if they desire, arrange to let each Ploughman have one person to guide the horses for the first two and the last two furrows, but in no case shall Ploughmen receive any other assistance, and their work must not be set up or touched by others. Attention should be given to the firmness and sufficiency of the work below, more than to its neatness above the surface.

9. The Local Committee is required to fix the time to be allowed for ploughing the portion of land, and they are recommended that the time be at the rate of not more than fourteen hours per imperial acre on light land, and eighteen hours on heavy or stony land.

NOTE.—The attention of the Directors of the Society has frequently been drawn to certain irregularities which have occurred in connection with the conduct of Ploughing Matches and the completion of the Reports thereon. Complaints have been made (*a*) that the allotted amount of ground has not been ploughed, within the specified time, by the competitor awarded the first prize; (*b*) that the Report sent to this Society has been signed by a Member of the Society who was not present at the Match. It has to be pointed out that any infringement of the above Rules by a Local Society or Ploughing Association will render that Society or Association liable, at the discretion of the Board of Directors, to be debarred from receiving the Society's Medals in future.

2. MEDALS FOR HOEING COMPETITIONS.

The Minor Silver Medal will be given to the winner of the first Premium at Hoeing Competitions, provided a Report in the following terms on the official form is made to the Secretary within a month of the Competition by a Member of the Society. Forms of Report to be had on application.

RULES OF COMPETITION.

1. All Matches must be at the instance of a local Society or Hoeing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.

2. The title of such Society or Association, together with the name and address of its Secretary, must be registered with the Secretary of the Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh.

3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.

4. All reports must be lodged within one month of the date of the Match, and certified by a Member of *the Highland and Agricultural* Society who was present at it.

5. A Member can only report one Match; and same Competitor cannot carry more than three Medals in the same season.

6. To warrant the grant of the Medal there must have been twelve hoes in Competition, and not less than Three Pounds awarded in prizes by the local Society. The Medal to be given to the winner of the first prize.

7. The time to be allowed to be decided by the local Committee, but in no case to exceed two hours for two drills of 100 yards each, the third drill being unoccupied, so that Competitors do not interfere with their neighbour's work.

8. Competitors must finish their work as they go along—no turning back or after-dressing allowed. Hand-picking or transplanting shall be strictly prohibited.

9. A Committee shall be appointed to watch the work, and any Competitor found transplanting or otherwise not complying with the Rules shall have his number withdrawn, and be debarred from receiving any prize which might otherwise have been awarded to him.

NOTE.—Medals will be awarded under similar conditions for Competitions in hand-singling.

3. CERTIFICATES AND MEDALS FOR LONG SERVICE.

Certificates and Silver Medals for long service will be awarded by the Society to farm servants, male or female, having an approved service in Scotland of not less than thirty years—(*a*) with one employer on the same or different holdings; (*b*) on the same holding with different employers.

Special Certificates and Gold Medals are also awarded to farm servants, male or female, having an approved service in Scotland of not less than forty-five years, on similar conditions of employment as the above.

These Certificates and Medals will be issued as applications are received.

Forms to be obtained from the Secretary, 8 Eglinton Crescent, Edinburgh.

War Service to count towards the time required for qualification, where farm servants have returned to same service or employment with same farmer or his family.

Estate workers, such as Foresters, Carters, Grooms, &c., are not eligible. The award is strictly confined to Farm workers, such as Ploughmen, Shepherds, &c.

NOTE.—From 14th to 23rd June all communications for the Secretary should be addressed to him at the Secretary's Office, Showyard, Inverness.

Address for Telegrams—"Society," Edinburgh.
Telephone No.—Edinburgh 23655.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

GENERAL SHOW OF STOCK, IMPLEMENTS AND MACHINERY

INVERNESS

21st, 22nd, 23rd, and 24th June 1932.

LAST DAYS OF ENTRY.

Implements and other Articles—Monday, 4th April.
New Implements—Monday, 4th April.
Horticultural Section—Saturday, 23rd April.
Cattle, Horses, Sheep, Goats, and Pigs—Thursday, 28th April.
(*Separate Form for* each *Entry.*)
Poultry, Eggs, Dairy Produce, Wool, Rural Industries, and Horse-Shoeing and Shoe-Making—Thursday, 28th April.
Rabbits, Honey, and Stock Judging Competition—Thursday, 19th May.
Buttermaking Competitions—Thursday, 26th May.

No entry of stock at ordinary fees taken later than those which are received at the Society's Office, Edinburgh, by first post, or 10 o'clock, on Friday morning, 29th April. Late Entries for Cattle, Horses, Sheep, Goats, and Pigs taken on payment of 10s. additional for each entry (Poultry, Eggs, Dairy Produce, Wool, Rural Industries, and Horse-Shoeing and Shoe-Making at double fees) till 10 o'clock on Wednesday morning, 4th May, at the Society's Office, Edinburgh.

President of the Society.

THE DUKE OF PORTLAND, K.G., P.C., G.C.V.O.

Chairman of the Board of Directors.

ALEXANDER MURDOCH, EAST HALLSIDE, HALLSIDE, LANARKSHIRE.

Convener of the Local Committee.

THE DUKE OF SUTHERLAND, K.T.

The District connected with the Show comprises the Counties of Caithness, Inverness, Moray, Nairn, Orkney and Shetland, Ross and Cromarty, and Sutherland.

REGULATIONS.

GENERAL CONDITIONS.

1. The Competition, except where otherwise stated in the Premium List, is open to Exhibitors from all parts of Great Britain, Northern Ireland, and Irish Free State.

Entries.

2. Every Lot must be intimated by a Certificate of Entry, lodged with the Secretary *not later than Monday, 4th April, for Implements, New Implements, and other Articles; Saturday, 23rd April, Horticultural Section; Thursday, 28th April, for Stock, Poultry, Eggs, Dairy Produce, Wool, Rural Industries, and Horse-shoeing and Shoe-making; Thursday, 19th May, for Rabbits, Honey, and Stock Judging Competition; Thursday, 26th May, for Buttermaking Competitions.* No Entry of stock taken at ordinary fees later than those which are received at the Society's Office by first post, or 10 o'clock, on Friday morning, 29th April. Late entries for Cattle, Horses, Sheep, Goats, and Pigs taken on payment of 10s. additional for each entry (Poultry, Eggs, Dairy Produce, Wool, Rural Industries, and Horse-shoeing and Shoe-making at double fees) till 10 o'clock Wednesday morning (4th May), at the Society's Office, Edinburgh. Printed forms of Entry will be issued on application to the Secretary, No. 8 Eglinton Crescent, Edinburgh. Admission Orders for Exhibits and Attendants will be forwarded to Exhibitors, by post, previous to the Show.

Between 28th April and 26th May an Exhibitor who has made, in due time, an entry of Horses, Cattle, Sheep, Goats or Pigs, in a particular class, will be permitted to substitute for it an entry of another animal in the *same class* on payment of a fee of Five Shillings each entry.

Licenses for moving Stock.

3. This Premium List is published and the Show will be held subject to any Orders that may be issued by the Ministry of Agriculture or Local Authorities. Any licences that may be required for the movement of Stock into or away from the Show must be obtained by Exhibitors. For these licences application should be made to the Chief Constable, Inverness.

Diseased Animals.

4. Animals suffering from any form of infectious or contagious disease—including ringworm or other form of infectious or contagious skin ailment—must not be brought to the Show. Those infringing this Rule shall be liable to a fine of 40s., and to have their Stock removed.

Horses suffering from cold.

The Steward of Horses shall have power to require that any animal showing symptoms of cold be examined by the Veterinary Surgeon, and, if found to be so suffering, the animal shall be isolated or excluded from the Showyard.

Fees to accompany Entries.

5. No Entry can be received or recorded unless it is accompanied by the necessary fees, and complies fully with the Regulations in the Premium List, the Secretary being empowered to return entries sent without the necessary fees.

Particulars of Entries.

6. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor. The Society shall have power at any

time to call upon an Exhibitor to furnish proof of the correctness of any statement in his entry.

Name of Breeder. 7. The name of the Breeder, if known, must be given, and if the Breeder is not known, a declaration to that effect, signed by the Exhibitor, must be made on the Entry Schedule, and no pedigree will be entered in the Catalogue when the Breeder is unknown.

No Substitution of Animals. 8. All animals, except calves, foals, and lambs shown with their dams, must be entered in the classes applicable to them, and cannot be withdrawn after entry, or other animals be substituted in their place, except as provided in Rule 2.

One Class only. 9. For prizes given by the Society, no animal shall be allowed to enter in more than one class, or to compete in any class except that prescribed for animals of its pedigree and description; but this Rule does not apply to the Jumping Classes.

Ownership. 10. All stock exhibited at the Show, except where otherwise stated in the Premium List, must be, at the time of entry, the *bona fide* property of the Exhibitor in whose name it is entered.

Responsibility for Entries. 11. Exhibitors are alone responsible for the accuracy and eligibility of their entries. The recording of an entry or the admission of the exhibit to the Showyard will not relieve the Exhibitor of this responsibility. The entry fee paid for an animal entered in a class for which it is not eligible is not returnable.

Cancelling of Entries. 12. In the event of the entries in any section of Cattle, Horses, Sheep, Goats, or Pigs being less in number than an average of three per class, or the number of different Exhibitors in the section being less than three, the classes for that section shall be cancelled automatically for the year and the entry fees returned.

Society not liable. 13. The Society shall not be liable for any loss or damage which Stock, Poultry, Dairy Produce, &c., Implements, or other articles may sustain at the Show, or in transit.

Disqualified Exhibitors. 14. The Society reserve to themselves the right of refusing, cancelling, or prohibiting the exhibition of entries from any person who, after 1st January 1904, has been expelled from the membership of any Agricultural or Dairy Society, or who may have been prohibited, suspended, or disqualified from making entries or exhibiting at the Show or Shows of any Agricultural or Dairy Society or Breed Society in consequence of having attempted to obtain a Prize by giving a false Certificate, or by other unfair means, or who is under exclusion from any Breed Society for fraudulent practices.

Animal Disqualified. 15. When an animal has previously been disqualified by the decision of any Agricultural or Breed Society in the United Kingdom, such disqualification shall attach, if the Exhibitor, being aware of the disqualification, fail to state it, and the grounds thereof, in his entry, to enable the Directors to judge of its validity.

Tampering with Animals. 16. Any artificial contrivance or device of any description found on or proved to have been used on an animal, either for preventing the flow of milk or for any other improper purpose, will disqualify that animal from being awarded a Premium, and the Owner of said animal may be prohibited from again entering Stock for any of the Society's General Shows, for such a period as the Directors may see fit.

Blindfolding Horses. 17. Horses shall not be blindfolded while being shown in the Ring.

Rejecting Entries. 18. The Society further reserve to themselves the right of refusing any entries they may think fit to exclude, or to cancel any entry made, or to prohibit the exhibition of any entry.

19. Stock entered for competition, and actually in the Show, is subject to the control and under the orders of the Stewards, Secretary, and other Show officials of the Society, and such stock may not be withdrawn from competition without the consent of the Stewards or Secretary. *Control of Exhibits.*

20. Persons making insulting remarks to, or in any way unduly interfering with, the Judges, Stewards, or other officials while in the performance of their duties, and all Exhibitors or others in charge of stock while in the judging rings refusing to accept or display tickets, rosettes, &c., awarded by the Judges, and handed to them by the Stewards or other officials, or tearing up tickets, rosettes, &c., so awarded and handed to them, or indulging in any similar conduct, shall be considered guilty of misconduct, and shall be dealt with under these rules. *Improper Conduct.*

21. All persons in charge of stock or other exhibits, and all persons admitted into the Showyard, shall be subject to the rules of the Society, and shall obey the orders of the Stewards, Secretary, and other officials of the Society. Exhibitors shall be answerable for the conduct of their servants or representatives. *Subject to Orders.*

The Stewards and other officials have power to enforce the regulations of the Society in their different departments. *Power of Officials.*

22. A protest having reference to exhibits at the Show may be lodged by any person having interest. Protests having reference to competitions which take place on the first day of the Show must be lodged in writing with the Secretary at his Office in the Showyard not later than 9 A.M. on Wednesday, the second day of the Show, and parties must be in attendance at the Secretary's Office in the Showyard at 9.30 A.M. that day, when protests may be disposed of. Protests relating to competitions taking place after the first day of the Show must be lodged before 5 P.M. on the day on which the particular exhibition takes place. Each protest must state specifically the grounds of objection, and must be accompanied by a deposit of £2, 2s., which deposit may, if the objection be proved frivolous to the satisfaction of the Directors, be forfeited. Protests may be lodged at any time by Directors, and in this case no deposit will be required. Protests will be heard and determined by the Directors. Protests on veterinary grounds not received. *Protests.*

23. The violation of any one of the regulations, or disobedience of the orders of the Directors, Stewards, Secretary, or other officials of the Society, shall render the offending person liable to the forfeiture of all premiums awarded to him, or of such a portion as the Directors may ordain, and also liable to be expelled from the membership of the Society, and disqualified from again, or for a certain number of years, exhibiting at the Shows of the Society, or to have his case disposed of by fine or otherwise as the Directors may determine. *Penalties for Offences.*

24. The decision of the Directors shall, in every matter arising at or in connection with the Show, be final; and every person present at the Show, whether as a Judge, Exhibitor, Visitor, or otherwise, shall be deemed thereby to have agreed to refer the subject-matter of such decision to the final determination of the Directors to the exclusion of all Courts of Law. *Final Authority.*

25. All decisions under these rules may, along with the names and addresses of the persons against whom such decisions have been pronounced, be communicated by the Secretary of this Society to the Secretaries of all Agricultural or Dairy Societies holding open Shows in the United Kingdom, and to the Secretaries of all Breed Societies *Intimating Decisions.*

in the United Kingdom, and may be published in the Annual Reports of this Society, and in such newspapers or journals as the Directors may determine; and every Exhibitor competing at the Show, and every person present at the Show, whether as a Director, Member of Committee, Steward, Judge, Exhibitor, Visitor, or otherwise, shall be deemed thereby to have consented to such communication and publication.

Former Winners. 26. An animal to which a first Premium has been awarded, even if it should not qualify for that Premium, or an animal which subsequently becomes entitled to a first Premium, at a General Show of the Society, cannot again compete in the same class, notwithstanding any alteration in the heights stated for such class, but may be exhibited as Extra Stock.

Herd-books. 27. Shorthorn, Aberdeen-Angus, Galloway, Belted Galloway, Highland, British Friesian, and Red Poll cattle must be entered in the herd-books—Ayrshire Cattle in the herd-book or any Appendices thereto—or the Exhibitor must produce evidence that his animal is eligible to be entered therein. Dun Galloways entered in the ordinary Galloway classes must be registered in, or eligible for entry in the Galloway Cattle Society's herd-book.

Height of Horses. 28. All Horses or Ponies entered in classes in which a particular height is stated shall, before being judged, be measured with their shoes on. No subsequent measuring or alteration of shoes will be permitted.

Weight of Shoes. 29. Exhibitors of Hackney and Harness Horses shall be required to adhere to the Rules and Regulations of the Hackney Horse Society with regard to the weight of shoes on their exhibits, the Society's Veterinary Inspector being instructed to examine all the Hackneys and Harness Horses on the opening morning of the Show and see that the following Rules as to the weight of shoes are attended to—viz., (*a*) For Hackneys exceeding 14 hands (except Hackney yearling colts and Hackney yearling fillies), no shoe (nails included) may exceed 2 lb. in weight; (*b*) for Ponies not exceeding 14 hands, Hackney yearling colts and Hackney yearling fillies, no shoe (nails included) may exceed 1½ lb. in weight.

Overfeeding. 30. Breeding Stock must not be shown in an improper state of fatness, and the Judges are requested not to award Premiums to overfed animals; and no Cattle or Sheep which after the age of twelve months have been exhibited as Fat Stock at any Show are eligible to compete in the Breeding Classes for the Society's Prizes.

Sires. 31. Aged Bulls and Stallions must have had produce, and, along with two-year-old Bulls, three-year-old Colts, and two-shear and aged Tups, have served within the twelve months immediately preceding the Show.

Calving Cows. 32. Except as may be otherwise specially provided in this Premium List, cows of all breeds (other than Ayrshire, British Friesian, and Red Poll) must have had a calf within nine months previous to the Show, and when exhibited must be in milk. Cows of the Ayrshire, British Friesian, and Red Poll breeds must have had a calf within fifteen months previous to the Show. *Animals of any age that have had a calf must be shown as Cows.*

In-calf Heifers. 33. Two-year-old Heifers of the Shorthorn, Aberdeen-Angus, Galloway, Belted Galloway, Ayrshire, British Friesian, and Red Poll breeds, and three-year-old Highland Heifers, must be in calf when exhibited, and the Premiums will be withheld till birth be certified, which must be within nine months after the Show.

Mares.

34. A Mare entered in a class for "Mares with foal at foot" must have produced a foal after 1st January of the year of the Show, must have regularly nursed her own or another foal, and must have the foal with her in the Show. If the mare's own foal is alive it must be the foal shown with the mare. In the case of a Mare that has not foaled before the Show, or whose foal has died, she shall, if not in milk, be eligible without further entry to compete among the Yeld Mares if a corresponding class for Yeld Mares be included in the Premium List. Draught Yeld Mares must produce a foal within twelve months from the first day of the Show. A Mare in a class for "Mares or Geldings" may or may not have had a foal in the year of the Show, but shall not have her foal exhibited with her, nor be in milk at the time of the Show.

Sows.

35. All Sows born in or before 1930 must have produced a litter of pigs in the year of the Show before the opening day. Sows born between 1st January and 1st September 1931 must either have produced a litter of pigs before the Show, or produce a litter within three months of the last day of the Show. Certificates of the date of farrowing must be supplied in every case.

Calves and Foals.

Calving, Farrowing, and Foaling Certificates.

36. With reference to Regulation 33, birth of a live or full-time calf must be certified; and in regard to Regulation 34, birth of at least a nine months' foal; or in the case of the death of the dam, a Veterinary Surgeon's certificate must be produced certifying that at the time of death the animal was so far advanced with calf or foal that if it had lived it would have produced a calf or foal within the periods stated in Regulations 33 and 34. Certificates required by the foregoing Regulations will be issued after the Show, and must reach the office of the Secretary as follows: calving certificates within ten months, farrowing certificates within four months, and foaling certificates within thirteen months, of the last day of the Show. In default of this, the animal will be regarded as having failed to fulfil the Regulations, and the prize will therefore pass to the animal next in order of merit or be forfeited.

Special Prizes.

37. Except when otherwise provided, the awards of Special Prizes shall not be subject to the Regulations as to calving, foaling, and farrowing.

Payment of Prizes.

38. The Premiums awarded, except those withheld till birth of calf or foal or litter of pigs is certified, will be paid as soon after the Show as practicable, and, with the exception of the Tweeddale Gold Medal, Special Cups, and Medals, may be taken either in money or in plate.

Veterinary Examination of Stallions and Colts.

39. No Stallion or entire Colt, two years old or upwards, shall be allowed to compete for any of the Society's Prizes unless it has previously been licensed for stud purposes during the current year by the Department of Agriculture for Scotland, the Ministry of Agriculture and Fisheries, or the Irish Department of Agriculture.

Soundness of other Horses.

Accommodation for examination.

40. Judges are particularly requested to satisfy themselves, as far as possible, regarding the soundness of all Horses before awarding the Prizes, and to avoid giving Prizes to animals showing symptoms of hereditary disease. The Judges may consult the Society's Veterinary Surgeon if they deem it expedient. Private accommodation is provided for the examination of horses by the Veterinary Surgeon. No protests on veterinary grounds will be received.

Ewes.

41. Every Ewe must have given birth to and reared a lamb in the year of the Show; and Ewes of the Blackface and Cheviot breeds must be in milk, and have their lambs at foot.

Milking. 42. Animals in milk of the Dairy breeds must be milked dry at 6 o'clock on the evening previous to the opening of the Show in the presence of, and to the satisfaction of, the Steward of Cattle or a representative of the Society duly authorised by him. Animals arriving after six o'clock will be milked dry at the time of arrival.

All animals in milk, in the Ayrshire Cattle Classes and Dairy Cow Class, must be milked out in the ring before the awards are made.

Clipping. 43. Sheep must have been clipt bare after the first day of the November preceding the Show, no part of the animal to be clipt prior to that date—this Rule not to apply to Cheviot Sheep.

No Blackface Sheep shall be eligible (except where otherwise provided) which has not been clipt bare on or after the 1st April of the year of the Show.

Colouring, &c., of Sheep and Pigs. 44. The Steward of Sheep, who can call in assistance if so desired by him, shall have full power to disqualify any pen of Blackface, Cheviot, Border Leicester, and Half-bred Sheep which he considers unnaturally coloured, or when the fleece, face, or legs have been dealt with by the use of foreign substances.

The use of artificial whitening or powder on Large White and Middle White Pigs is prohibited, and the Judge is empowered to disqualify any pig so whitened or powdered.

Flock Books. 45. All Oxford Down and Suffolk Sheep shown must be entered or eligible for entry in the Oxford Down and Suffolk Flock Books respectively.

Poultry. 46. In Poultry the Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.

Railway Passes. 47. Railway Certificates for Stock, for both outward and return journeys, will be issued to Exhibitors before the Show along with their Tickets of Admission (see page 100).

Admission of Stock. 48. Poultry and Stock will be admitted on Monday, the day before the opening of the Show, and, with the exception of Horses, must be in the Yard before 12 o'clock that night. Horses must be in before 8 o'clock on the morning of Tuesday, except those entered in classes for which other times for arrival are elsewhere stated in this Premium List. Judging begins at 9.30 A.M. on Tuesday. Poultry and Stock will be exhibited on Tuesday, Wednesday, Thursday, and Friday. Any animals selected by the Stewards may be required to take part in the Stock Judging Competition on the Thursday. Stock may be admitted on the Saturday preceding the Show, but only by sending two days' prior notice to the Secretary's Office in the Showyard.

Parades. 49. Horses and Cattle must be paraded at the times stated in the Programme of the Show, and when required by the Stewards, and under their direction. Females of the Highland Cattle breed born in or after 1927 must be paraded; those born before 1927 will be paraded at the option of the Exhibitor. In Parade, Horses must be ridden or led as provided in their respective Classes. Prize and commended Cattle and Horses will receive two rosettes each, which must be attached to the head of the animal, one on each side. Attendants must be beside their animals *forty-five minutes before the hour of Parade*, and be ready to proceed to the ring immediately on receiving the order of the Stewards. Infringement of this Rule, or failure of any attendant to obey the orders of the Society's officials, will render the Exhibitor liable to a fine of 20s. for each separate infringement or act of disobedience, and to the forfeiture of any or all of the Prizes awarded to him at this Show.

Responsibility of Exhibitors. 50. Exhibitors shall be answerable for all acts, whether committed by themselves, their servants, or others in charge of their Stock, and shall be responsible for the condition of their animals during the whole time they remain in the Showyard.

51. No animal shall be taken out of its stall after 10 A.M. during the Show except by order of the Stewards, or with permission of the Secretary. *Moving from stalls.*

52. Cattle shall not be taken out of their stalls to be washed after the Judging has commenced. Cattle must not be washed beside the Judging Rings. Those infringing this Rule shall be liable to a fine of 10s. *Washing Cattle.*

53. Soap or other adhesive material must not be used in dressing cattle or horses. The use of blacking or other colouring matter on cattle is prohibited. Infringement of this Rule will render the animal upon which the material is used liable to be disqualified. *Soaping prohibited. Colouring matter.*

54. Loose-boxes will be provided for all horses; covered accommodation for other live stock. Stalls for nurse cows charged at ordinary rates. Boxes (floored) for attendants on Cattle, Horses, Sheep, Goats, and Pigs will be provided at a charge of 40s. for each box for members; 50s. for non-members. (See Rule 79.) *Loose-boxes and Stalls.*

55. Exhibitors requiring the boxes, stalls, or pens for their animals to be floored must give instructions, stating the Catalogue No., to the Society's Showyard Erector, Mr John Reid, Showyard, ten days before the Show opens. (For charges, see Rule 78.) *Floored Boxes and Stalls for Animals.*

56. Bulls must be secured by nose-rings, with chains or ropes attached, or with strong halters and double ropes. All Cattle, other than Highland Cattle, must be tied in their stalls. *Securing Cattle.*

57. During the time the Show is open to the public no rug shall be hung up so as to conceal any animal in a horse-box or stall, except with the special permission of the Steward of that department. *Concealing Animals.*

58. Five days' supply of straw, hay, grass, and tares will be provided free by the Society. Any additional fodder or other kinds of food required will be supplied at fixed prices in the Forage-yard. The Forage-yard will close at 1.30 P.M. on Friday, the last supply to be given to attendants then; and if any extra supply is required on account of stock remaining in the Yard after the close of the Show, notice must be given to the Forage Steward not later than 5 o'clock on Thursday. Any servant removing bedding from an adjoining stall will be fined in double the amount taken. Exhibitors may fetch their own cake or corn to the Yard, but not *grass, tares, hay, or straw.* Coops, food, and attendance for Poultry and Rabbits will be provided by the Society. *Fodder.*

59. Servants in charge of Stock must bring their own buckets or pails and a piece of rope or sheep-net to carry their forage. Mangers, and sheep and pig troughs, will be provided. *Feeding appliances.*

60. Sawdust must not be used as bedding for Stock. *Sawdust.*

61. As the command of water in the Yard is limited, it is particularly requested that waste be avoided. *Water.*

62. No lights allowed in the Yard at night, and Smoking is strictly prohibited within the Sheds. Those infringing this Rule shall be liable to a fine of 10s. The gates will be closed at midnight, and no person shall be allowed to enter or leave the Yard between that time and 5 A.M. without a special permit. *Lights and Smoking. Closing of Gates.*

63. Stock or Poultry cannot be removed from the Yard till 5 P.M. on Friday, the last day of the Show, except on certificate by the Veterinary Surgeon employed by the Directors, countersigned by the Steward of the department or the Secretary. *Removal of Stock.*

Withdrawal of horses overnight. 64. At the close of the Show on Tuesday, Wednesday, and Thursday, horses may be withdrawn for the night on a deposit of £5 for each animal, which shall be forfeited, along with any prize money it may have gained, if the animal is not brought back. They must return between 7 and 7.30 the following morning, and those not in before 8 shall forfeit 10s. Horse passes to be applied for at the Secretary's Office between 5 and 6 P.M. on Tuesday, and the deposit, unless forfeited in whole or in part, will be returned between 12.30 and 2.30 on Friday.

Order in removal. 65. When the Stock is leaving the Yard, no animal is to be moved till ordered by those in charge of clearing the Yard. Those transgressing this Rule shall be liable to a fine of 10s., and to be detained till all the other Stock is removed.

Penning and removing Poultry. 66. Poultry may be penned before the opening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor an authorised representative of the Exhibitor being present to pen or remove Poultry, the birds will be penned and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to Exhibits by errors or accidents in penning, despatching, or conveying Exhibits.

Closing of Poultry Shed to Public. 67. On the opening day of the Show the Poultry Shed will be closed to the public during the Judging. On the last day of the Show the Poultry Shed will be closed to the public at 4 P.M.; at 5 P.M. Exhibitors or their representatives will be admitted to the Shed to remove Exhibits, provided the Exhibitor has, *not later than* 11 A.M. *on the last day of the Show*, given written notice to the Secretary to the effect that the Exhibitor or the Exhibitor's representative will attend at the Poultry Shed at 5 P.M. to remove the birds.

JUDGING STOCK AND POULTRY.

Opening Gates. 68. On Tuesday, the first day of the Show, no person will be admitted, except Servants in charge of Stock, till 8 A.M., when the Gates are opened to the public.

Judging. 69. The Judges will commence their inspection at 9.30 A.M. The spaces reserved for the Judging will be enclosed, and no encroachment shall be permitted.

Insufficient merit. 70. In no case shall a Premium be awarded unless the Judges deem the animals to have sufficient merit; and where only one or two lots are presented in a class, and the Judges consider them unworthy of the Premiums offered, it shall be in their power to award a lower prize.

Commendations. 71. In addition to the Premiums, the Judges may award **one** Very Highly Commended, **one** Highly Commended, and as many Commended tickets in each class as they consider justified by the number and merit of the entries.

Ayrshire and British Friesian Cows and Heifers. 72. Ayrshire and British Friesian Cows which have not calved before the Show, whether entered in a class for Cows in Milk or for Cows in Calf, shall be judged along with the Cows in Calf, and Ayrshire and British Friesian Cows or Heifers which have calved before the Show—in whichever of the classes entered—shall be judged along with Cows in Milk. Heifers entered in a Milk Class, which have not calved before the Show, will be judged along with Heifers in Calf.

Attending Members' duties. 73. Attending Members will accompany the Judge of each section. It will be the duty of Attending Members to bring the animals out to the Judges and to see that no obstruction is offered to them, and that the space reserved for them is not encroached upon; to ticket the prize animals; to send the Nos. of the prize animals to the Award Lectern near the Secretary's Office; to assist the Judges in completing their return of awards; and should any difficulty arise, to communicate with the Stewards or Secretary.

74. It shall not be competent for any Exhibitor, nor for his Factor or Land-Steward, to act as a Judge or Attending Member in any class in which he is competing.

DAIRY PRODUCE.

75. Dairy Produce will be received in the Showyard on Monday, the day before the opening of the Show, and till 8 A.M. on Tuesday, the first day of the Show. Judged at 9.30 A.M. on Tuesday. Exhibited Tuesday, Wednesday, Thursday, and Friday.

Placing and removing Dairy Produce. 76. Dairy Produce must have been made on the Exhibitor's farm in the year of the Show. No Exhibitor shall show more than **one** lot in each class. Exhibits of Dairy Produce may be placed before the opening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor a person with written authority from the Exhibitor being present to place or remove exhibits, they will be placed and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits. In the case of exhibits which are not removed by 5.30 P.M. on the closing day of the Show, the Society will hold itself at liberty to hand them over to the railway companies for despatch to the respective Exhibitors.

STALL RENT.

Stall Rent. 77. The Stall Rents (which include Entry Fees) as stated opposite the individual Classes in this List, shall be paid by Exhibitors when making their entries. The Secretary is instructed to return entries sent without the necessary fees.

FLOORED BOXES AND STALLS.

Floored Stalls for Animals. 78. Exhibitors desiring the boxes, stalls, or pens for their animals to be floored can have this done by giving instructions, stating the Catalogue No., ten days before the opening of the Show, to the Society's Showyard Erector (Mr John Reid, Showyard, Inverness), to whom the following charges for flooring have to be paid: Horses, 30s. each; Ponies, Cattle, Sheep, and Pigs, 20s. each.

ACCOMMODATION FOR ATTENDANTS.

Accommodation for Attendants. 79. Boxes for accommodation of attendants on Stock will, if desired, be provided beside the Stock at a charge of 40s. per box for members and 50s. for non-members. Attendants' boxes will be floored and lined with wood, with door. Applications for attendants' boxes must accompany entries of Stock, and in the case of Belted Galloway, Ayrshire, British Friesian, and Red Poll Cattle and all Horses, Exhibitors must state the animal next to which the attendant's box is to be placed. Attendants' boxes in the other Cattle Sections and the Sheep, Goat, and Pig Sections will be erected at the end of each run of shedding. **Attendants' boxes cannot be guaranteed after the closing date.**

IMPLEMENTS AND OTHER ARTICLES.

Admission of Goods. 80. Implements will be received in the Yard from Tuesday, 14th June, till 5 o'clock on the afternoon of Monday, 20th June. Exhibited Tuesday, Wednesday, Thursday, and Friday. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor, and prices must be stated.

Premiums. 81. No Money Prizes or Medals, except when specially offered, will be given by the Society for Implements of any kind.

Refusing Entries. 82. Agricultural Implements, and Implements and collections of articles not Agricultural, will be received for Exhibition, but the Secretary is entitled to refuse Entries from dealers in articles not deemed worthy of Exhibition.

Local Operatives. 83. In order to encourage exhibits of Agricultural Implements from operative Blacksmiths and Carpenters in the district of the Show, open space will be provided for these in some less prominent part of the Yard at a charge of 15s. for space 10 feet wide and 20 feet deep.

Articles not entered. 84. Every article to be exhibited must be entered on the Society's Entry Form. Any article not so entered that is taken to the Show is liable to be ordered out of, or removed from, the Showyard, or confiscated to the Society. Exhibitors infringing this rule are moreover liable to a fine of £1.

Selling by auction and noisy behaviour forbidden. 85. "Cheap-Jacks" are not admitted to the Showyard. The selling of goods by auction, shouting, and other behaviour calculated to annoy visitors or Exhibitors, are strictly forbidden. Exhibitors infringing this Regulation are liable to a fine of £1, and to have themselves and their goods ordered out of, or removed from, the Showyard, or to have their goods confiscated to the Society.

Placing Exhibits. Removing Exhibits. 86. The articles of each Exhibitor must all be placed in one stand, except Implements in motion, and must not on any account extend beyond the allotted space. No article shall be moved out of its stand, or the stand dismantled, till the termination of the Show, at 5 P.M. on Friday. Those infringing this Rule shall be liable to a fine of 10s.

Restoring Turf. 87. When the ground requires to be broken, the turf must be carefully lifted and laid aside, and the surface must be restored to the satisfaction of the Society, and at the expense of the Exhibitor. Failing this being done, the Society shall be at liberty to restore the ground and charge the cost to the Exhibitor.

Arranging Exhibits. 88. Exhibitors must arrange their own articles *within* the space allotted to them before 9 o'clock on Tuesday, the first day of the

Show, and to the satisfaction of the Stewards in charge of the Implement Yard. Exhibitors are prohibited from sub-letting space allotted to them, and from displaying the name of any other firm on their Stand. *Signs.* All signs, except signs on gables, must face the front only. Nails must not be driven into the canvas.

Handbills. 89. Exhibitors are not allowed to distribute handbills anywhere in the Yard except at their own Stand; and they must not for this or any other purpose encroach upon the adjacent alleys or open spaces.

Sweeping Stands, &c. 90. Exhibitors are required to have their Stands and the portions of the alleys immediately adjoining them swept up before eight o'clock on each morning of the Show.

Fuel. 91. All Machines requiring steam or fire must be entered as such in the Certificate, and will be placed in the Motion Yard. *Coke only shall be used in all cases where fire is required.* Coal shall not be used at any time in the Showyard. Those infringing this Rule shall incur a penalty of £5.

Steam Engines. 92. No Steam Engine shall be driven in the Yard at a greater speed than 4 miles an hour. Traction Engines shall not be used in conveying Exhibits or other goods from one place to another in the Showyard.

Traction Engines. 93. Locomotive and Traction Engines and other Machines must not be moved from their places without permission of the Secretary or Stewards, and must not leave their stands till 6 P.M. on Friday.

Consigning Implements. 94. There must be attached to each Implement, when forwarded to the Show, a label bearing the Exhibitor's name, and that of the Implement, as well as the number of the Exhibitor's stand.

95. The carriage of all Implements must be prepaid.

Photographing in Showyard. 96. Photographing in the Showyard is not permitted, except by photographers having a Stand in the Showyard or holding a "Photographer's Ticket." The "Photographer's Ticket" may be had from the Secretary, price 20s. It admits the holder to the Show when open to the public, and entitles him to photograph in the Showyard, subject to arrangements made by the Stewards. It does not entitle the holder to sell photographs in the Showyard. No photographer shall be allowed in the ring during Parades, except with the sanction of the Steward of Parades.

Offices. 97. Covered Booths for Offices (9 feet by 9 feet), purely for business, not for exhibition of goods, can be had for £5 to Members and £7 to Non-Members.

Exhibitors' and Attendants' Tickets. 98. Each Exhibitor in the Implement Department who is not a Member of the Society will receive one free Ticket of Admission to the Showyard for himself or a member of his firm, and will receive, in addition, for the use of attendants employed by him at his Stand, two Tickets of Admission for each complete ten feet of shedding in the Motion Yard, and one Ticket for each complete ten feet of shedding in the other sections. No additional Free Tickets can be issued in any circumstances whatever. Additional Attendants' Tickets, not more than three for each ten feet of frontage, and in no case exceeding a maximum of twenty for one Exhibitor, may be obtained by application in writing by the Exhibitor at 5s. each. *No tickets will be issued without an Order.*

Tickets to be filled up and signed. 99. The Tickets of Admission for Exhibitors and Attendants referred to in the foregoing Regulations will (about fourteen days prior to the Show) be issued to the Exhibitors in blank, with the number of the Exhibitor's Stand. The name of the person for whom each ticket is intended must be written on it before it is used. Each

Tickets not Transferable. Improper use of Tickets.

person holding a Free Ticket of Admission must sign his or her name on the back thereof, and must also, when required, sign his or her name in the book at the Entrance Gate. Exhibitor's attendants are strictly cautioned not to lend or transfer their Tickets, which can be used only by the persons whose names they bear, and who must be *bona fide* acting for, or employed by, the Exhibitor. No ticket is transferable. An Exhibitor is liable to a fine of £1 for each case of transfer or other improper use of a Ticket issued to himself or employee.

Admission of Supplies for Stand-holders.

100. The following are the arrangements for the admission of Supplies (Refreshments or other goods) for Stand-holders during the Show: Messenger on foot (with or without hand-barrow) with supplies, admitted by Special Ticket; price for one admission, 2s., for six admissions, 10s. Motor or horse vehicle and driver, with supplies, admitted by Special Ticket; price for one admission, 2s. 6d., for six admissions, 12s. These Special Tickets may be had from the Secretary. Vehicles, with supplies, will be admitted to the Showyard only between *Seven o'clock and Nine o'clock*, on each morning of the Show, except by written permit from the Secretary.

Cycles.

101. The riding of Cycles in the Showyard is prohibited.

Accidents.

102. The Society will not be responsible for any accident that may occur from the machinery belonging to any Exhibitor; and it is a condition of entry that each Exhibitor shall hold the Society harmless, and indemnify it against any legal proceedings arising from any accident caused by his machinery.

Alcoholic Drinks.

103. The giving of Alcoholic Drinks to visitors at Stands in the Show is strictly prohibited. With a view to the enforcement of this rule the Society reserves the right of unrestricted access, by its authorised representative, to all Exhibitors' Stands during the Show.

Gas and Electric Power.

104. Exhibitors desiring the use of gas in the Showyard should apply to the Manager, Gas Works, Inverness, and those desiring electric power should apply to the Manager, Electric Supply Works, Inverness, not later than 14th May.

Space for Stands.

105. * Ground to be taken in spaces of 10 feet frontage by 20 feet deep, and in Motion Yard in spaces of 10 feet frontage by 50 feet deep. Exhibitors must take their space in one or other of the following Sections. Space is not let partly covered and partly open.

Exhibits not in Motion.

Exhibits not in motion may be excluded from the Motion Yard. The space in the Motion Yard being limited in extent, and intended mainly for exhibits in motion, not more than one-fifth of the space allotted to any one Exhibitor—and in no case more than 600 square feet—may be occupied in the Motion Yard by exhibits not in motion.

Maximum Space.

106. The maximum extent of space which any one Exhibitor may apply for shall be 60 feet of frontage in the Motion Yard, and 120 feet of frontage in the other Sections.

Allocation of space.

107. The Society reserves the right to allot to applicants for Stands either the whole or part of the space they ask for.

Fitting up of Stands.

108. Exhibitors requiring work executed in connection with the fitting up of stands allotted to them must employ the Society's Showyard Erector—Mr John Reid, 55 Blenheim Place, Aberdeen. The execution of orders received later than one week before the opening of the Show cannot be guaranteed.

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* Special provision may be made for Exhibitors of both machinery in motion and implements and machinery not in motion on application being made to the Secretary.

109. Rates for space, payable by Exhibitors when making their Entries:—

	Members.	Non-Members.
1. Open ground without Shedding, 20 ft. deep, per 10 ft.	£1 10 0	£2 5 0
2. Special open ground, without Shedding, 20 ft. deep, per 10 ft.	2 10 0	3 5 0
3. Ordinary Shedding, 20 ft. deep, 7 ft. to eave, per 10 ft.	1 10 0	2 5 0
4. Special Shedding, 20 ft. deep, 7 ft. to eave, per 10 ft.	2 10 0	3 5 0
5. Ordinary Shedding, 20 ft. deep, 7 ft. to eave, *close boarded at back*, per 10 ft.	3 0 0	4 0 0
6. Special Shedding, 20 ft. deep, 7 ft. to eave, *close boarded at back*, per 10 ft.	4 10 0	5 10 0
7. †Motion Yard, without Shedding, 50 ft. deep, per 10 ft.	3 0 0	4 15 0
8. †Motion Yard, with Shedding (10 ft. open behind, 20 ft. covered, and 20 ft. *open in front*), 11 ft. to eave, per 10 ft.	4 10 0	6 0 0
9. Special Section for Motor Vehicles, 30 ft. deep (20 ft. covered and 10 ft. *open in front*), 11 ft. to eave, per 10 ft.	4 10 0	5 10 0
10. Covered Booths for offices, 9 ft. by 9 ft., each . .	5 0 0	7 0 0
11. Press offices, 9 ft. by 9 ft., each £4.		

† See Rules 105 and 106.

Tents and marquees not allowed in the Showyard. All internal fittings to be executed by the Exhibitor at his own expense. The Society's Showyard Erector must be employed. See Rule 108.

HORTICULTURAL SECTION.

Judge: John T. Jeffrey.

1. Exhibits in this section may comprise (*a*) collections of flowers, plants, shrubs, or vegetables, and (*b*) formal gardens or rock gardens.

2. The Society will award a Gold Medal, together with a prize of £10, for the best exhibit in class (*a*), and a Gold Medal, together with a prize of £10, for the best exhibit in class (*b*). Silver Medals, not exceeding six in number, will be offered for other exhibits of outstanding merit.

3. Application for space, for which no stand rent or entry fee is payable, must be made on special entry forms, to be obtained from the Secretary and lodged on or before 23rd April. Entry forms must give full details of each exhibit and the amount of space required. Space, which may be either covered or open, will be allocated in sections of 10 feet each, with a depth of 20 feet, and a maximum of 60 feet frontage for one exhibitor. For space without shedding special consideration will be given to applications from exhibitors desiring a greater depth than 20 feet. Staging will be provided free of charge.

4. The Society reserves the right to refuse any application for space, or to limit the amount of space to be allocated to any exhibitor.

5. Each exhibitor shall receive one exhibitor's ticket and two attendants' tickets for each 10 feet of frontage. Additional attendants' tickets, not more than three for each 10 feet of frontage, and in no case exceeding a maximum of twenty, may be purchased at a price of 5s. each.

6. All exhibits must be in position not later than 5 P.M. on Monday, 20th June, with the exception of cut flowers, which may be staged up till 8 A.M. on Tuesday, 21st June. Judging will commence at 9.30 A.M. on Tuesday. Stands must remain open until the Show closes on each of the four days.

NEW IMPLEMENTS.

1. Entries of New Implements for the Society's Silver Medal must be made on or before 4th April. Entries shall be made on a special form obtainable from the Secretary, and must define clearly the exact nature of the novelty which qualifies such implement to be entered for a Medal. Unless the "New Implement" be properly described in the specification, and particulars of its novelty are given at the time of making the entry, it will not be accepted.

2. For each entry of a "New Implement," a non-returnable Entry Fee of £1 will be charged.

3. In cases of sufficient merit, the Judges will recommend the award of the Society's Silver Medal to New Implements for agricultural or estate purposes, or to new improvements in such implements.

4. The Society does not bind itself to try in the field every "New Implement" entered for a Silver Medal, but in general a practical trial will be required before an award is made. The Judges shall report to the Directors those cases in which they consider a practical trial necessary.

5. Where intimation is received by the Secretary, not later than the 25th April, that a "New Implement" is ready for trial, the Directors may arrange for a practical trial before the Show at a place and date to be decided upon. In other cases the practical trial of New Implements will take place after the Show.

6. Any Exhibitor who expresses a wish to do so can, with the sanction of the Steward of Implements, at his own expense take his New Implement out of the Showyard during the Show week and put it to work, and if within a reasonable distance, the Judges will, if they deem it necessary, inspect it at work and decide if it is worthy of a Silver Medal.

7. No Silver Medals will be awarded to, nor can any entry as New Implements be accepted of, machines of any class for which competitive trials have been announced by the Society as about to take place.

8. The Judges of New Implements will commence their inspection at 2.30 P.M. on Monday, 20th June, and will take in rotation the stands of the Exhibitors who have entered New Implements for the Society's Silver Medals. Each Exhibitor, or his representative, will be expected to be at the stand to explain the working of the Implement to the Judges. If the exhibit be not ready and in working order by the time the Judges make their inspection, it is liable to be struck off the list.

9. All publications by Exhibitors of the award of the Society's Silver Medals must state the year of the award, and must specify the exact nature of the "New Implement," of the improvement, or of the attachment to an Implement, for which the Silver Medal has been awarded.

10. On the recommendation of the Judges, with the approval of the Directors, any New Implement of merit, which cannot be sufficiently tried, or which is capable of further development, may be entered and exhibited as a "New Implement" at the succeeding Show of the Society.

11. The Judges' decision, when duly accepted and recorded, will in all cases be final.

RESERVED SEATS (NUMBERED) IN GRAND STAND.

For Charges and Tickets, apply to Secretary up to opening day of Show. Thereafter tickets are sold only at the Booking-office in Showyard behind Grand Stand

ADMISSION OF THE PUBLIC.

The public will be admitted daily at 8 A.M. Judging begins on Tuesday at 9.30 A.M. The charges for admission to the Yard will be —Tuesday, from 8 A.M. till 5 P.M., 7s. 6d. **Wednesday,** from 8 A.M. till 5 P.M., 5s. **Thursday,** from 8 A.M. till 5 P.M., 2s. 6d.; from 5 P.M. till 8 P.M., 1s. **Friday,** from 8 A.M. till 5 P.M., 1s.

On **Thursday** and **Friday** children under twelve years of age admitted at 6d.

No Pass-out Checks given, and no re-admission without payment.

Season Tickets—12s. 6d. each (children under 12 years of age, 5s. each)—on application to Secretary. On the days of the Show, Season Tickets are sold only at the Entrance Gates.

ADMISSION OF MEMBERS AND EXHIBITORS.

On exhibiting their "*Member's Badge,*" which is strictly not transferable, Members of the Society are admitted free to the Showyard. Badges will be sent to all Members residing in Great Britain, Northern Ireland, and Irish Free State, whose addresses are known, and on no account will duplicates be issued. **All Members not producing their badges must pay at the gates, and the admission money will not on any account be returned.** Badges must be signed by Members before being presented at the gate, and Members should continue to wear the badge during the whole time that they are in the Showyard.

Tickets of admission to the Showyard are sent to Exhibitors of Stock, Poultry, Dairy Produce, &c. (not Members), whose Entry Fees amount to not less than 12s. 6d.

For Exhibitors of Implements and their assistants tickets are issued as provided in the Regulations for Implements.

VARIOUS.

Exhibitors may display their own Placards *inside and in front of* their stands; with this exception, no Bills of any kind other than those of the Society are permitted on any of the Show erections. No newspapers or any other articles to be carried about the Yard for sale or display.

No Carriages or Equestrians admitted without special leave from the Directors, and then only for Invalids. Bath-chairs may be brought in.

Premium Lists, Regulations, and Certificates of Entry may be obtained by applying at the Secretary's Office, No. 8 Eglinton Crescent, Edinburgh.

All Communications should be addressed to The Secretary of the Highland and Agricultural Society of Scotland, No. 8 *Eglinton Crescent, Edinburgh. From* 14*th to* 23*rd June, to the Secretary's Office, Showyard, Inverness.*

Address for Telegrams—"SOCIETY," EDINBURGH.

Telephone No.—EDINBURGH, 23655.

RAILWAY ARRANGEMENTS.

The Railway Companies will be furnished with a list of the Exhibitors of Stock and Implements, after the 31st May. All applications for horse-boxes and trucks, and for information as to train arrangements, must be made by the Exhibitors themselves to the Stationmaster where their stock is to be trucked.

The arrangements made by the Railway Companies for the conveyance of Live Stock and Goods to and from the Show are indicated *below, but Exhibitors are recommended to apply to the respective Companies for* full particulars :—

1. Live Stock, Agricultural Machines, Implements, and other exhibits *to* the Show to be charged ordinary rates.

2. Live Stock, Agricultural Machines, Implements, and other exhibits *from* the Show, if sold, to be charged ordinary rates.

3. Live Stock from the Show, if unsold, and returned not later than the second day after the closing day of the Show (excluding Sunday), to be carried at half rates back to the Station whence the animals were sent, at owner's risk, on surrender of a Certificate from the Exhibitor, provided in accordance with the Railway Companies' requirements, and signed by the Secretary, to the effect that they are really unsold ; failing surrender of such Certificate, ordinary rates will be charged. The reduction to half rates is to be allowed only when the Stock are returned by the same route as that by which they were conveyed to the Show, but it shall be in the option of the Railway Company or Companies to return the Stock at half rates by a different route. Minimum charge for Stock returning at half rates to be one-half the ordinary minimum.

4. Live Poultry from the Show, *if unsold*, to be carried by Passenger Train at half rates back to the Station from which sent, at O.R., on surrender of an agreed Certificate signed by the Secretary of the Show to the effect that the Poultry are unsold and remain the property of the Exhibitor. No Certificate will be required for such traffic which is intended by the owner to be returned from the Show to the original sending Stations by the same route as originally forwarded and the charges prepaid for both the outward and return journeys. (Poultry to be charged ordinary rates both ways when conveyed by Goods Train).

Poultry are only charged at the half rate when returned not later than the second day after the closing of the Show (Sunday being treated as a *dies non*).

5. Horse-boxes, or other Passenger Train vehicle, will not be provided for the carriage of Live Stock sent by Goods Train and invoiced at Goods Train rates. *For rates for Horse-boxes by Passenger and Special Trains, apply to the Railway Companies.*

6. Provender conveyed to and from Agricultural Shows with Live Stock will be charged at the applicable rates, subject to a free weight allowance, viz.—

Cattle	per animal,	56 lb.
Horses	,,	56 ,,
Sheep, goats, lambs, pigs, and calves .	,,	28 ,,

7. The carriage of all Live Stock, Implements, and other articles going to the Show for exhibition must be PREPAID ; and the carriage on all traffic *returned from the Show by Passenger Train Service must be PREPAID.*

The carriage charges on Live Stock conveyed in special vehicles by Passenger Train and intended to be returned to the original sending Station may also be prepaid for the return journey at the original sending Station if the owner so desires.

The Railway Charge on all exhibits which are conveyed by Passenger Train in the Guard's Van and intended to be returned from the Show direct to the original sending Station by the same route must be PREPAID, for both the outward and return journeys, at the original sending Station. The agreed form of address label for Poultry, Rabbits, Dairy Produce, Bee Appliances, Wool and Rural Industries exhibits, which will be supplied through the Secretary of the Society, must be used in such cases.

8. Attendants in charge of Live Stock are conveyed free in the cases shown below, when certified by the owners to be *bona fide* in charge of such Live Stock:—

In Horse-Boxes.—Horses and Cattle: One man for each consignment, except where the consignment requires more than one vehicle, when one man to each vehicle may be sent free; but where two or three Horses or Cattle forming one consignment are sent in the same Horse-box and a man is required to travel with each animal, a man for each animal may be conveyed free, provided each animal is charged for separately.

In Horse-Boxes.—Small animals: One man to each vehicle.

In specially constructed Cattle Trucks.—Cattle or other animals: One man to each vehicle.

9. Agricultural Machines, Implements and other Exhibits from the Show, *if unsold,* to be conveyed at half rates back to the Station whence they were sent, at Owner's risk, on production of a Certificate from the Exhibitor (provided and signed by the Show Secretary) to the effect that they are unsold; failing production of such Certificate, ordinary rates must be charged. The reduction to half rates is to be allowed only when the articles are returned by the same route as that by which they were conveyed to the Show, but it shall be in the option of the Railway Company or Companies to return the articles at half rates by a different route. This applies only to Goods Train Traffic.

10. Unsold articles, previously carried by railway, transferred from one Show to another, or exhibited at several Shows consecutively, and returned to the Station from whence originally sent, will be conveyed at half rates at Owner's risk, on production of a Certificate from the Exhibitor (provided and signed by the Show Secretary) to the effect that they are unsold; failing production of such Certificate, ordinary rates will be charged. This applies only to Goods Train Traffic.

11. The ordinary rates charged for carriage do not in any case include delivery *to,* or collection *from,* the Showground.

12. Agricultural Societies' Show Plant must be charged at Class 10 rates, station to station.

13. Tents, Canvas, Show Stands, and other articles not for exhibition—

(*a*) When the property of Exhibitors, to be charged half the ordinary rate at Owner's risk from Show to Show, and on return from the Show to the Station from whence originally despatched.

(*b*) When not the property of Exhibitors, to be charged the ordinary rates both going to and returning from Show.

14. Carriages and other Road Vehicles are only conveyed by Passenger Train when this can be conveniently done.

DELIVERY AND COLLECTION CHARGES.

Cartage Charges to be paid by the Exhibitor for the Delivery or Collection of traffic between the Railway Station at Inverness and the Showground of the Highland and Agricultural Society's Show at Inverness, on 21st, 22nd, 23rd, and 24th June.

General traffic	5s. 6d. per ton.
Minimum charge per consignment	3s.
Implements and Machinery (Agricultural), not exceeding 1 ton each	5s. 6d. per ton.
Minimum charge per delivery	3s.
Implements and Machinery (Agricultural) on their own wheels (specially hauled), not exceeding 1 ton	7s. 6d. each.
When hauled on their own wheels behind a Railway Company's lorry, loaded or partly loaded with goods, actual weight at	5s. 6d. per ton.
Single articles, exceeding 1 ton but not exceeding 3 tons	8s. per ton.
Single articles, exceeding 3 tons but not exceeding 5 tons	9s. 6d. per ton.
Single articles, exceeding 5 tons, by special arrangement only, but no less charge than	11s. 9d. per ton.
Loaded vans on their own wheels exceeding 1 ton but not exceeding 3 tons	8s. per ton.
Loaded vans on their own wheels exceeding 3 tons but not exceeding 5 tons	9s. 6d. per ton.
Loaded vans on their own wheels exceeding 5 tons, by special arrangement only, but no less charge than	11s. 9d. per ton.
Rustic Houses, by special arrangement only, but no less charge than	14s. per load.
Carriages, on their own wheels	6s. each.
Carriages, if carried on Railway Company's lorries	7s. 6d. per ton.
Minimum charge	7s. 6d.
Cattle, in floats	6s. per head.
Minimum charge for each float	8s. 6d.
Sheep, Goats, and Pigs, in floats	1s. 6d. per head.
Minimum charge for each float	8s. 6d.
Pigs, in crates	3s. 3d. per crate.
Minimum charge per load	6s. 6d.
Ordinary Parcels by passenger train	6d. each.
Miscellaneous passenger train traffic, including packages of plants and flowers carried at O.R. rates S. to S.	9d. per cwt.
Minimum charge per consignment	1s. 6d.
*Poultry in crates or hampers	9d. per crate or hamper.
*Rabbits in crates, hampers, &c.	
Cartage from point to point inside the Showground	3s. per hour.
Minimum charge	3s.

*** Poultry and Rabbit exhibits only will be conveyed at the Society's expense from the Railway Station to the Showyard and back, but no exhibit subject to railway charges will be received by the Society. All other delivery charges must be paid by the Exhibitor.**

THE PRINCE OF WALES CHAMPION MEDALS

The Prince of Wales Champion Medals, which were not awarded at the Hundredth Show in Edinburgh last year, are being offered for the same sections this year.

A Prince of Wales Champion Gold Medal for the *best Animal* in each of the following sections:—

1. Shorthorn.
2. Aberdeen-Angus.
3. Galloway.
4. Belted Galloway.
5. Highland.
6. Ayrshire.
7. British-Friesian.
8. Red Poll.
9. Blackface Sheep.
10. Cheviot.
11. Border Leicester.
12. Oxford Down.
13. Suffolk.
14. Large White Pig.
15. Middle White.
16. Large Black.

A Prince of Wales Champion Silver Medal for the *best Animal* in each of the following sections:—

1. Fat Cattle.
2. Dairy Cow.
3. Half-bred Sheep.
4. Shropshire.
5. Dorset Horn.
6. Fat Sheep.
7. Goat.

THE PRESIDENT'S CHAMPION MEDALS

A Champion Medal is given by the Duke of Portland, K.G., P.C., G.C.V.O., President of the Society, for the *best Animal* in the following sections:—

1. Clydesdale Stallion or Colt.
2. Clydesdale Gelding.
3. Clydesdale Mare or Filly.
4. Hunter.
5. Highland or Western Island Pony.
6. Shetland Pony.
7. North Country Cheviot Sheep.

NOTE.—*Animals entered as Extra Stock may compete for these Medals. Former Winners of the President's Medals are eligible. The Society shall have the right to photograph the Winners for publication in the 'Transactions.' At this Show no animal can be awarded more than one of these Medals.*

*CATTLE

SHORTHORN

Judge: W. F. M'Laren

Prince of Wales Champion Gold Medal for best Shorthorn Animal

ENTRY FEES *Members*	*ENTRY FEES* *Non-Members*	*CLASS*		*PREMIUMS* *First*	*Second*	*Third*	*Fourth*
				£	£	£	£
25/-	45/-	1	Bull born before 1st December 1929 . .	15	10	5	3
25/-	45/-	2	Bull born on or after 1st December 1929, and before 1st April 1930	15	10	5	3
25/-	45/-	3	Bull born on or after 1st April 1930, and before 1st December 1930	12	8	4	2
25/-	45/-	4	Bull born on or after 1st December 1930, and before 1st April 1931	12	8	4	2
25/-	45/-	5	Bull born on or after 1st April 1931. . .	10	6	4	2
25/-	45/-	6	Cow in Milk, born before 1st December 1928 .	12	8	4	2
25/-	45/-	7	Cow in Milk, born on or after 1st December 1928, and before 1st December 1929 . . .	10	5	3	2
25/-	45/-	8	Cow or Heifer born on or after 1st December 1929, and before 1st December 1930 . . .	10	5	3	2
25/-	45/-	9	Heifer born on or after 1st December 1930, and before 1st April 1931	10	5	3	2
25/-	45/-	10	Heifer born on or after 1st April 1931 . .	10	5	3	2

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* See Rules 32 and 33.

ENTRY FEES		CLASS		PREMIUMS			
Members	Non-Members		CATTLE	First	Second	Third	Fourth
			SHORTHORN—*continued*	£	£	£	£
			[1] **Paisley Perpetual Gold Challenge Cup,** value £300, for best Shorthorn, "Extra Stock" being eligible to compete.				
			[2] **The Duthie Perpetual Challenge Cup,** value £150, for best Animal in the Shorthorn Classes, "Extra Stock" being eligible to compete.				
			[3] **The Emilio R. Casares, jun., "Junior Champion Cup,"** value £50, for best Shorthorn Bull in Class 5, calved on or after 1st April of the year preceding the Show, that has passed the tuberculin test.				
			[4] **Best Shorthorn Bull in the Show,** entered or eligible for entry in Coates's Herd-Book—£20.				
			[4] **Silver Medal** to the Breeder of the winner of above Prize.				
			[5] **Tweeddale Gold Medal,** value £25, for best Shorthorn Bull.				
			Breeder of best Bull of any age in the five Classes—The Silver Medal.				
			[4] **Best Shorthorn Female in the Show,** entered or eligible for entry in Coates's Herd-Book—£20.				
			[4] **Silver Medal** to the Breeder of the winner of above Prize.				
			PRIZE MONEY BY SOCIETY . . £246				
			CONTRIBUTED 40				

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[1] This Cup, along with an endowment of £600, was provided from money collected in Paisley by the late Provost Muir M'Kean, and is in commemoration of the Society's first Show at Paisley in 1913. This year the Cup is offered for the best Shorthorn. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

[2] This Cup was gifted by the late Mr William Duthie, Collynie. The Cup may not be won on more than one occasion with the same animal. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica as a memento of his winning the Cup.

[3] Given by Mr Emilio R. Casares, jun. This Cup will become the property of the Exhibitor who shall win it three times, not necessarily in succession.

[4] Given by the Shorthorn Society.

[5] Annual Free Income from Fund of £500.

CATTLE

ABERDEEN-ANGUS

Judge : A. W. Howison

Prince of Wales Champion Gold Medal for best Aberdeen-Angus Animal

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
25/-	45/-	11	**Bull** born before 1st December 1929 . . .	15	10	5	3
25/-	45/-	12	**Bull** born on or after 1st December 1929, and before 1st December 1930.	15	10	5	3
25/-	45/-	13	**Bull** born on or after 1st December 1930, and before 1st March 1931	12	8	4	2
25/-	45/-	14	**Bull** born on or after 1st March 1931 . .	10	6	4	2
25/-	45/-	15	**Cow** in Milk born before 1st December 1928 .	12	8	4	2
25/-	45/-	16	**Cow** in Milk born on or after 1st December 1928, and before 1st December 1929 . . .	12	8	4	2
25/-	45/-	17	**Cow** or **Heifer** born on or after 1st December 1929, and before 1st December 1930 . . .	10	5	3	2
25/-	45/-	18	**Heifer** born on or after 1st December 1930, and before 1st March 1931	10	5	3	2
25/-	45/-	19	**Heifer** born on or after 1st March 1931 . .	10	5	3	2

[1] **Silver Cup**, value £50, for best Group of Aberdeen-Angus Cattle, consisting of one Bull and two Females, to become the property of an Exhibitor who shall win it three times, not necessarily in succession. "Extra Stock" eligible to compete.

[2] **Ballindalloch Challenge Cup**, value £50, for the best Bull of any age in the four Classes.

[3] **Silver Cup**, value 50 guineas, for best Aberdeen-Angus Bull born on or after 1st December 1929, to become the property of an Exhibitor who shall win it three times, not necessarily in succession.

Breeder of best Bull of any age in the four Classes—The Silver Medal.

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[1] Given by Mr W. Gilchrist Macbeth of Dunira, Comrie. A Silver Medal will be given by the Society to the winner as a memento of his winning the Cup.

[2] "The Ballindalloch Challenge Cups," value £50 each, are offered for the best Bull of any age and best Cow of any age (Heifers excluded) in the Aberdeen-Angus Classes, the former presented by the late Sir George Macpherson Grant, Bart., and the latter by the late Sir John Macpherson Grant, Bart. Each Cup will become the property of the Exhibitor who shall win it five times, not necessarily in succession. The Exhibitor and Breeder of the successful animals each year will receive the Society's Silver Medal, with suitable inscription.

[3] Given by Senor Eduardo Estanguet, Argentina.

ENTRY FEES		*CLASS*	CATTLE	*PREMIUMS*			
Members	*Non-Members*		ABERDEEN-ANGUS—*continued*	*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
			Exhibitor of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.				
			Breeder (if not also the Exhibitor) **of the Winner** of the Ballindalloch Challenge Cup—The Silver Medal.				
			[1] **Ballindalloch Challenge Cup,** value £50, for the best Cow of any age in Classes 15, 16, and 17.				
			Exhibitor of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.				
			Breeder (if not also the Exhibitor) **of the Winner** of the Ballindalloch Challenge Cup—The Silver Medal.				
			[2] **Silver Cup,** value £50, for the best Female Animal of the Aberdeen-Angus breed, to become the property of an Exhibitor who shall win it four times, not necessarily in succession. "Extra Stock" eligible to compete.				
			[3] **Champion Gold Medal,** value £10, for best Animal in the Breeding Classes, breeding animals shown as "Extra Stock" eligible to compete.				
			PRIZE MONEY BY SOCIETY . £226				

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[1] "The Ballindalloch Challenge Cups," value £50 each, are offered for the best Bull of any age and best Cow of any age (Heifers excluded) in the Aberdeen-Angus Classes, the former presented by the late Sir George Macpherson Grant, Bart., and the latter by the late Sir John Macpherson Grant, Bart. Each Cup will become the property of the Exhibitor who shall win it five times, not necessarily in succession. The Exhibitor and Breeder of the successful animals each year will receive the Society's Silver Medal, with suitable inscription.

[2] Presented by Mr Falconer L. Wallace of Candacraig, Strathdon. A Silver Medal will be given by the Society to the winner as a memento of his winning the Cup.

[3] Given by the Aberdeen-Angus Cattle Society.

CATTLE

GALLOWAY

Judge : James Carson

Prince of Wales Champion Gold Medal for best Galloway Animal

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
25/-	45/-	20	**Bull** born before 1st December 1929	15	10	5	3
25/-	45/-	21	**Bull** born on or after 1st December 1929 and before 1st December 1930	15	10	5	3
25/-	45/-	22	**Bull** born on or after 1st December 1930	12	8	4	2
25/-	45/-	23	**Cow** in Milk, born before 1st December 1929	12	8	4	2
25/-	45/-	24	**Cow** or **Heifer** born on or after 1st December 1929 and before 1st December 1930	10	5	3	2
25/-	45/-	25	**Heifer** born on or after 1st December 1930	10	5	3	2

[1] **Dr Gillespie Memorial Challenge Trophy,** value £50, for best Galloway Animal in the Breeding Classes, breeding animals shown as "Extra Stock" being eligible to compete—see conditions below.

[2] **Silver Challenge Cup,** value £50, for best animal of the sex opposite to that of the winner of the Dr Gillespie Memorial Challenge Trophy, "Extra Stock" being eligible to compete.

Breeder of best Bull of any age in the three Classes—The Silver Medal.

PRIZE MONEY BY SOCIETY . £158

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[1] This trophy was presented by the Galloway Cattle Society of Great Britain and Ireland for the best Galloway animal registered in the Galloway Cattle Society's Herd-Book, entered in any of the breeding classes, at the Show at which it may be competed for. The winner of the Trophy shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive the Galloway Cattle Society's Silver Medal as a memento of his winning the Trophy.

[2] This Cup was presented by the Galloway Cattle Society to commemorate the Hundredth Show of the Highland and Agricultural Society, to be awarded to best animal of the sex opposite to that of the winner of the Dr Gillespie Memorial Trophy registered in the Galloway Cattle Society's Herd-Book. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so.

CATTLE

BELTED GALLOWAY

Judge: J. R. Miller

Prince of Wales Champion Gold Medal for best Belted Galloway Animal

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First £	PREMIUMS Second £	PREMIUMS Third £	PREMIUMS Fourth £
25/-	45/-	26	**Bull** born before 1st December 1930 . .	10	5	3	2
25/-	45/-	27	**Bull** born on or after 1st December 1930 . .	10	5	3	2
25/-	45/-	28	**Cow or Heifer** born before 1st December 1929, in Milk or in Calf; if in calf and not in milk, to calve on or before 1st December of the year of the Show	10	5	3	2
25/-	45/-	29	**Heifer** born on or after 1st December 1929 . .	10	5	3	2

[1] **Knockbrex Challenge Cup**, value £50, for the best Belted Galloway Animal, "Extra Stock" being eligible to compete.

Edinburgh Corporation Perpetual Gold Challenge Cup for best Dairy Cow in Milk entered in Classes 28, 37, 38, 46, 48, 55, and 63. (*For Regulations, see page* 115.)

PRIZE MONEY BY SOCIETY . . £80

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[1] This Cup was presented by Mrs Brown, Kirkbrex, Glasgow, for the best Belted Galloway animal registered in the Dun and Belted Galloway Cattle Breeders' Association Herd-Book, entered in any of the breeding classes, at the Show at which it may be competed for. The winner of the Trophy shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive a Silver Medal as a memento of his winning the Trophy.

CATTLE

HIGHLAND

Judge : John A. Cameron

Prince of Wales Champion Gold Medal for best Highland Animal

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
25/-	45/-	30	**Bull** born before 1930 . .	15	10	5	3
25/-	45/-	31	**Bull** born in 1930	15	10	5	3
25/-	45/-	32	**Bull** born in 1931	12	8	4	2
25/-	45/-	33	**Cow** of any age with Calf at foot . . .	12	8	4	2
25/-	45/-	34	**Heifer** born in 1929	10	5	3	2
25/-	45/-	35	**Heifer** born in 1930	10	5	3	2
25/-	45/-	36	**Heifer** born in 1931	10	5	3	2

[1] **Perpetual Victory Challenge Cup,** approximate value 50 Guineas, for the best Animal in the Male Classes, "Extra Stock" being eligible to compete.

Breeder of best Bull in Classes 30, 31, and 32—The Silver Medal.

[1] **Perpetual Victory Challenge Cup,** approximate value 35 Guineas, for the best Animal in the Female Classes, "Extra Stock" being eligible to compete.

Prize Money by Society . . £178

Given by the Highland Cattle Society of Scotland.

CATTLE

AYRSHIRE

Judge: John Young

1. To be eligible for competition in the Ayrshire Section Cows must have an authenticated Milk Yield, and younger Females (including Cows which have not completed their first lactation) and Bulls an authenticated Milking Pedigree, of a definite minimum amount.

2. The minimum amount referred to shall be as follows, calculated on the basis of a period between calvings of 52 weeks, and 3·8 per cent of butter fat:—

(a) Cows which have completed two or more lactations—700 gallons.

(b) Cows which have completed only one lactation—600 gallons.

(c) Younger Females and Bulls—an authenticated Milking Pedigree for dam and dam of sire on a similar basis.

3. In the case of Cows with two or more lactations the record lodged may be that for any year the Exhibitor may select.

4. In the case of a Cow which has no milking pedigree, and which has not completed her first lactation at date of entry, but is likely to calve again before date of Show, such Cow may be provisionally entered on her own milk yield produced within forty weeks after first calving, but when the Cow has calved again a further certificate in terms of the Rules must be obtained and produced before the Cow is allowed to enter the judging ring. The latter certificate is the standard of qualification, and failure to produce such will render the Cow liable to disqualification, and no entry money will be returned.

5. The evidence of Milk Yield and Milking Pedigree shall be in the form of a Certificate signed by the Secretary of the Scottish Milk Records Association. The Certificate, besides giving the actual yields, shall give these calculated on a uniform basis of a period of 52 weeks between calvings, and 3·8 per cent butter fat. This latter figure shall be communicated to the Judges before adjudicating.

In the case of an Exhibitor founding on the Milk Yield of any animal, or animals, made in England, said Exhibitor must forward a Certificate of Milk Yield from the Secretary of the County Milk Recording Society in which the Exhibitor resides, together with a Certificate from a competent analyst, stating that a butter-fat test had been made at least once every 28 days during the period of lactation, and with details of said butter-fat tests attached, to the Secretary of the Scottish Milk Records Association, who has undertaken to check the records and to certify same.

6. The authenticated Milk Yields and authenticated Milking Pedigrees shall appear in the Catalogue.

N.B.—**Certificates above referred to must be obtained from Mr John Howie, 58 Alloway Street, Ayr, and lodged with Entries.**

Prince of Wales Champion Gold Medal for best Ayrshire Animal

ENTRY FEES		*CLASS*		*PREMIUMS*		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
25/-	45/-	37	[1] **Cow** in Milk,* born before 1929	12	8	4
25/-	45/-	38	[1] **Cow** in Milk,* born on or after 1st January 1929 .	10	7	3
25/-	45/-	39	[1] **Cow** of any age in Calf,* and due to calve before 1st December of the year of the Show . .	10	7	3
25/-	45/-	40	**Heifer** born on or after 1st June 1929, in Calf and due to calve before 1st December of the year of the Show	10	7	3
25/-	45/-	41	**Heifer** born in 1930	10	5	3
25/-	45/-	42	**Heifer** born in 1931	8	5	3

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[1] Cows in these Classes must have produced a calf within fifteen months prior to the Show.

* See Rules 42 and 72.

CATTLE

AYRSHIRE—*continued*

ENTRY FEES		*CLASS*		*PREMIUMS*		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
25/-	45/-	43	**Bull born before 1930**	12	8	4
25/-	45/-	44	**Bull born in 1930**	10	7	3
25/-	45/-	45	**Bull born in 1931**	8	5	3
			[1] **Cowhill Champion Cup,** approximate value £30, for best Animal of the Ayrshire breed, entered with a number in the Herd-Book. The Cup to be won three times, not necessarily in succession, by the same person with different animals, before becoming the property of the winner.			
			[2] **Special Prizes** for Cows from Grade "A" (Tuberculin Tested) or Certified Herds, drawn from Classes 37, 38, and 39.	7	5	2
			[3] **Special Prize of £10** for the best Female Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd Book prior to 1st June 1932.			
			Breeder of best Bull of any age in Classes 43, 44, and 45—The Silver Medal.			
			[3] **Special Prize of £10** for the best Male Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd Book prior to 1st June 1932.			
			Edinburgh Corporation Perpetual Gold Challenge Cup for best Dairy Cow in Milk entered in Classes 28, 37, 38, 46, 48, 55, and 63. (*For Regulations, see page* 115.)			

PRIZE MONEY BY SOCIETY	£182
CONTRIBUTED	30

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[1] Presented by the late Major Henry Keswick, Cowhill Tower, Dumfries, to the Ayrshire Cattle Herd Book Society, to be competed for annually at the Shows of the Highland and Agricultural Society of Scotland.

[2] £10 given by Messrs Brown & Polson, Ltd., Paisley.

[3] Given by the Ayrshire Cattle Herd Book Society.

CATTLE

BRITISH FRIESIAN

Judge : John Brown

Prince of Wales Champion Gold Medal for best British Friesian Animal

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
25/-	45/-	46	[1] Cow in Milk,* born in or before 1928 . .	12	8	4	2
25/-	45/-	47	[1] Cow in Calf,* and not in Milk, born in or before 1928	10	5	3	2
25/-	45/-	48	[1] Cow in Milk, born in 1929 or 1930 . .	10	5	3	2
25/-	45/-	49	Heifer born in 1930	10	5	3	2
25/-	45/-	50	Heifer born in 1931, before 1st July . . .	10	5	3	2
25/-	45/-	51	Heifer born in 1931, on or after 1st July . .	10	5	3	2
25/-	45/-	52	Bull born in or before 1929	12	8	4	2
25/-	45/-	53	Bull born in 1930	10	5	3	2
25/-	45/-	54	Bull born in 1931	10	5	3	2

[2] **The MacRobert Champion Silver Bell,** value 50 Guineas, for the best Animal in the British Friesian Classes, registered in or eligible for entry in the British Friesian Cattle Society's Herd-Book, "Extra Stock" being eligible to compete.

[3] **Silver Challenge Cup,** value 50 guineas, for the best Group of three animals. The Cup to become the property of an Exhibitor winning it three times, not necessarily in succession. "Extra Stock" eligible to compete.

Champion Prize of £5 given by the British Friesian Cattle Society for the best Female exhibited.

Breeder of Best Bull of any age in Classes 52, 53, and 54—The Silver Medal.

Champion Prize of £5 given by the British Friesian Cattle Society for the best Male exhibited.

Edinburgh Corporation Perpetual Gold Challenge Cup for best Dairy Cow in Milk entered in Classes 28, 37, 38, 46, 48, 55, and 63. (*For Regulations, see page* 115.)

PRIZE MONEY BY SOCIETY . .	£162
[3] CONTRIBUTED	40

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* See Rule 72.

[1] Cows in these Classes must have produced a calf within fifteen months prior to the Show.

[2] Presented by Lady Rachel Workman MacRobert, Douneside, Tarland. This Bell will become the property of the Exhibitor who shall win it three times, not necessarily in succession. The winner of the Bell on each occasion will receive a miniature replica in silver as a memento of winning the Bell. The Breeder of the winning animal will also receive a replica, provided he or she is not also the Exhibitor.

[3] Given by the British Friesian Cattle Society.

CATTLE

RED POLL

Judge: Walter R. Burrell

Prince of Wales Champion Gold Medal for best Red Poll Animal

Entry Fees Members	Entry Fees Non-Members	Class		Premiums First £	Premiums Second £	Premiums Third £
25/-	45/-	55	[1] **Cow** in Milk or in Calf, born before 1930	10	5	3
25/-	45/-	56	**Heifer** born in 1930	10	5	3
25/-	45/-	57	**Heifer** born in 1931	10	5	3
25/-	45/-	58	**Bull** born in or before 1930	10	5	3
25/-	45/-	59	**Bull** born in 1931	10	5	3

[2] **Kinmount Challenge Cup,** value about £50, for the best Female Animal in the Red Poll Classes registered in the Red Poll Cattle Society's Herd-Book, "Extra Stock" being eligible to compete.

Edinburgh Corporation Perpetual Gold Challenge Cup for best Dairy Cow in Milk, entered in Classes 28, 37, 38, 46, 48, 55, and 63. (*For Regulations, see page* 115.)

Prize Money by Society	£70
[3] Contributed Prizes	20

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[1] Cows in this Class must have produced a calf within fifteen months prior to the Show.

[2] This Cup was presented to the Society by the late Lieut.-Colonel Charles Brook of Kinmount, Annan. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so.

[3] Contributed by Red Poll Cattle Society.

CATTLE

FAT CATTLE

Judge: Walter Biggar

Prince of Wales Champion Silver Medal for best Fat Animal

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First £	PREMIUMS Second £	PREMIUMS Third £
25/-	45/-	60	**Bullock,** any pure breed or cross, born on or after 1st December 1929 and before 1st December 1930	7	3	–
25/-	45/-	61	**Bullock,** any pure breed or cross, born on or after 1st December 1930	7	3	
25/-	45/-	62	**Pair of Cross-bred Bullocks or Pair of Cross-bred Heifers,** any age	7	3	–

Prize Money by Society . . £30

[Exhibitors of Fat Cattle must state the breed of the sire and dam when making their entries.]

DAIRY COW

Judge: William Burkitt

Prince of Wales Champion Silver Medal for best Dairy Cow in Class 63

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First £	PREMIUMS Second £	PREMIUMS Third £
25/-	45/-	63	***Dairy Cow,** in Milk, any pure breed or cross, and of any age	10	7	3

N.B.—Pure Bred Dairy Cows for which Classes are otherwise provided—*e.g.*, Belted Galloways, Ayrshires with milk records, British Friesians, and Red Polls—are not eligible for this Class.

Cows in this Class are also eligible to compete for The Edinburgh Corporation Perpetual Gold Challenge Cup. (*For Regulations, see next page.*)

Prize Money by Society . . £20

See Rules 32 and 42.

CATTLE

Judge : William Burkitt

(*To be judged for inspection points at* 10 A.M. *Wednesday, 22nd June*)

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
5/-	5/-	64	**Perpetual Gold Challenge Cup,** presented by the Corporation of the City of Edinburgh to commemorate the Hundredth Show of the Highland and Agricultural Society of Scotland. The Cup to be offered this year for the best Dairy Cow in Milk, entered in Classes 28, 37, 38, 46, 48, 55, and 63. "Extra Stock" eligible to compete. A **Gold Medal**, value ten guineas, given by Dr T. G. Nasmyth, Edinburgh, will be presented to the winner as a memento of his winning the Cup.				

A separate entry form must be lodged for each animal entered for this Cup on or before 28th April.

CONDITIONS OF AWARD.

1. All cows competing must be in milk.
2. All animals, except those from Certified or Grade "A" (T.T.) Herds, must have passed the Double Intradermal Tuberculin Test not more than three months and not less than one month prior to the first day of the Show. The Test must be carried out by a County or City Veterinary Inspector, where such is available, failing whom by a Veterinary Surgeon approved by the Board of Directors of the Society. A certificate to this effect must be lodged with the Secretary, at 8 Eglinton Crescent, Edinburgh, not later than Wednesday, 1st June.
3. Points be given for (*a*) Inspection, (*b*) Weight of Milk, (*c*) Butter fat, (*d*) Lactation period.
4. Points to be awarded as follows :—
   Inspection.—
   Maximum of 100 points for inspection.
   Milk Yield—
   (*a*) One point for every 10 days since calving, deducting the first 40 days, with a maximum of 12 points.
   (*b*) One point for every pound of milk produced.
   (*c*) Twenty points for every pound of butter fat produced.
   Deduction—Ten points each time the butter fat is under 3 per cent. No cow will be eligible for the Cup whose average butter fat, over the two milkings, is less than 3·5 per cent.
5. Animals competing for the Cup must be clean milked, to the satisfaction of the Stewards, on Wednesday, 22nd June, at 7 A.M. The place and order of milking will be arranged by the Stewards. The milk of the next 24 hours will be taken for the Competition. The times of milking will be 7 P.M. on Wednesday, 22nd June, and 7 A.M. on Thursday, 23rd June.
6. The milk yielded during the Competition shall be the property of the Society.

PRIZE MONEY BY SOCIETY .	. £1325	0
CONTRIBUTED . . .	. 130	0
CUPS, MEDALS, &c.. .	. 1222	5
Total Prizes for Cattle	. **£2704**	**5**

[See Note as to EXTRA STOCK, p. 133.]

*HORSES

CLYDESDALE

STALLION AND COLT

Judge: Andrew Renwick

To be judged at 9.30 A.M. on Tuesday, 21st June

President's Champion Medal for best Clydesdale Stallion or Colt

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
55/-	75/-	65	**Stallion** born before 1929	20	15	10	4
55/-	75/-	66	**Entire Colt** born in 1929	20	15	10	4
55/-	75/-	67	**Entire Colt** born in 1930	20	15	10	4
40/-	60/-	68	**Entire Colt** born in 1931	15	9	6	4

[1] **Cawdor Challenge Cup,** value 50 Guineas, for best Clydesdale Stallion or Colt.

Breeder of best Male Animal of any age in the above Classes—The Silver Medal.

PRIZE MONEY BY SOCIETY . . . £181

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* **For prizes given by the Society, no animal is allowed to enter in more than one Class, except that horses entered in other Classes may also compete in the Jumping Classes.**

[1] This Cup is offered by the Clydesdale Horse Society of Great Britain and Ireland (subject to the conditions of that Society) for the best Clydesdale Stallion or Colt registered in the Clydesdale Stud-Book, entered in any of the Clydesdale Horse Classes, at the Show at which it may be competed for. No Stallion rising five years old or upwards will be allowed to compete for this Cup unless proof be furnished to satisfy a Committee, appointed for this purpose by the Council of the Clydesdale Horse Society, that he has during the preceding season left at least 35 per cent of the mares served by him in foal. The Cup must be won four times by an Exhibitor with different animals (but not necessarily in consecutive years) before it becomes his absolute property. The animal winning this Cup must be certified free from hereditary disease. The winner of the Cup, other than the absolute winner, shall, before delivery thereof is made to him, give security to the Clydesdale Horse Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. Until the Cup be won outright, the winner on each occasion will receive the Clydesdale Horse Society's Silver Medal as a memento of his winning the Cup.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

HORSES

CLYDESDALE—*continued*

GELDING

Got by a Registered Clydesdale Stallion

Judge: William Brown

To be judged at 2 P.M. *on Tuesday,* 21*st June*

President's Champion Medal for best Clydesdale Gelding

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First £	PREMIUMS Second £	PREMIUMS Third £	PREMIUMS Fourth £
40/-	60/-	69	**Gelding** born before 1929	15	9	6	4
40/-	60/-	70	**Gelding** born in 1929	15	9	6	4
40/-	60/-	71	**Gelding** born in 1930	15	9	6	4
40/-	60/-	72	**Gelding** born in 1931	12	8	4	2

[1] **The Meiklem Gold Challenge Cup,** value 110 guineas, for best Clydesdale Gelding, to become the property of an Exhibitor who shall win it four times with different animals, but not necessarily in succession. "Extra Stock" eligible to compete.

PRIZE MONEY BY SOCIETY . £128

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[1] Given by Mr William Meiklem, Bennochy Park, Kirkcaldy.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

HORSES

CLYDESDALE—*continued*

MARE AND FILLY

Judge : Robert Mackay

To be judged at 9.30 A.M. on Tuesday, 21st June

President's Champion Medal for best Clydesdale Mare or Filly

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
55/-	75/-	73	**Mare** of any age, with Foal at foot, or due to foal before 31st July 1932	20	12	7	4
40/-	60/-	74	**Yeld Mare** born before 1929.	15	9	6	4
40/-	60/-	75	**Yeld Mare or Filly** born in 1929	15	9	6	4
40/-	60/-	76	**Filly** born in 1930	15	9	6	4
40/-	60/-	77	**Filly** born in 1931	15	9	6	4

[1] **Cawdor Challenge Cup,** value 50 Guineas, for best Clydesdale Mare or Filly.

[2] **William Taylor Memorial Prize of £10 and Certificate** to the breeder of the best Clydesdale Filly entered in Classes 76 and 77.

PRIZE MONEY BY SOCIETY . .	£179
CONTRIBUTED PRIZE . . .	10

FOAL

Judge: Robert Mackay

Members	*Non-Members*	*CLASS*		*First*	*Second*	*Third*	*Fourth*
55/-	75/-	78	**Foal, Colt or Filly,** born on or after 1st January 1932	5	3	2	1

(If also entered with Dam in Class 73, the entry fee will be 5/-.)

PRIZE MONEY BY SOCIETY . . £11

Total Prize Money for Clydesdale Horses, £509

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[1] This Cup is offered by the Clydesdale Horse Society of Great Britain and Ireland (subject to the conditions of that Society) for the best Clydesdale Mare or Filly registered in the Clydesdale Stud-Book, entered in any of the Clydesdale Horse Classes, at the Show at which it may be competed for. The Cup must be won four times by an Exhibitor with different animals (but not necessarily in consecutive years) before it becomes his absolute property. The animal winning this Cup must be certified free from hereditary disease. The winner of the Cup, other than the absolute winner, shall, before delivery thereof is made to him, give security to the Clydesdale Horse Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. Until the Cup be won outright, the winner on each occasion will receive the Clydesdale Horse Society's Silver Medal as a memento of his winning the Cup.

[2] Given by William Taylor Memorial Committee.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

HORSES

HUNTER

Judge: James J. Paterson

To be judged at 9.30 A.M. *on Tuesday*, 21*st June*

President's Champion Medal for best Hunter

Entry Fees		*Class*		*Premiums*		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
55/-	75/-	79	**Hunter Brood Mare,** with Foal at foot, or due to foal before 31st July 1932 . . .	15	7	3
40/-	60/-	80	**Yeld Mare, Filly, or Gelding** born in 1929—*in hand*	10	5	3
40/-	60/-	81	**Yeld Mare, Filly, or Gelding** born in 1930—*in hand*	10	5	3
40/-	60/-	82	**Filly, Colt, or Gelding** born in 1931—*in hand* .	10	5	3
			Special Prizes for Foals shown with their dams in Class 79	3	2	1

[1] **Dumfries Centenary Silver Challenge Cup,** value £100, for best Hunter. The Cup to become the property of an Exhibitor who shall win it three times, not necessarily in succession, at Shows at which there are not less than three Saddle Classes. "Extra Stock" not eligible to compete.

[2] **Best Hunter Filly,** entered in Classes 80, 81, and 82, registered with a number in the Hunter Stud-Book, or the entry tendered within one month of the award—Champion Gold Medal, value £10.

PRIZE MONEY BY SOCIETY . . £85

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[1] Presented by Members of the Dumfriesshire Hunt to commemorate the centenary of the Highland Society's first Show at Dumfries in 1830.

[2] Given by the Hunters' Improvement and National Light Horse Breeding Society.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

HORSES

[1] HIGHLAND and WESTERN ISLAND PONIES

Judge: John M. Macdonald

President's Champion Medal for best Highland or Western Island Pony

(*To be judged at* 2 P.M. *on Tuesday*, 21*st June*)

ENTRY FEES *Members*	*ENTRY FEES* *Non-Members*	*CLASS*		*PREMIUMS* *First* £	*PREMIUMS* *Second* £	*PREMIUMS* *Third* £
40/-	60/-	83	**Stallion** born before 1930, over 14 hands and not exceeding 14.2 hands	8	4	2
40/-	60/-	84	**Stallion** born before 1930, not exceeding 14 hands .	8	4	2
40/-	60/-	85	**Mare** born before 1930, over 14 hands and not exceeding 14.2 hands, yeld or with Foal at foot .	8	4	2
40/-	60/-	86	**Mare** born before 1930, not exceeding 14 hands, yeld or with Foal at foot	8	4	2
40/-	60/-	87	**Entire Colt** born on or after 1st January 1930, not exceeding 14.2 hands	6	4	2
40/-	60/-	88	**Filly** born on or after 1st January 1930, not exceeding 14.2 hands	6	4	2

[2] **Fife and Kinross Perpetual Gold Challenge Cup,** value £200, for best Highland or Western Island Pony, "Extra Stock" being eligible to compete.

[3] **Special Prize of £10** given by Highland Pony Society for best Male Animal not exceeding 14.2 hands, entered in Classes 83, 84, and 87. "Extra Stock" not eligible to compete.

[3] **Special Prize of £10** given by Highland Pony Society for best Female Animal not exceeding 14.2 hands, entered in Classes 85, 86, and 88. "Extra Stock" not eligible to compete.

PRIZE MONEY BY SOCIETY . . £40

CONTRIBUTED PRIZES . . 60

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[1] The Department of Agriculture for Scotland give £40 towards prizes for Highland and Western Island Ponies.

[2] This Cup, along with an endowment of £400, was subscribed for by the Counties of Fife and Kinross in commemoration of the Society's first Show at Cupar-Fife in 1912. This year the Cup is offered for the best Highland or Western Island Pony. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

[3] The animals winning these prizes must be entered or accepted for entry in the Highland Section of the National Pony Stud-Book. Competition to be strictly confined to animals passed sound and free from hereditary disease.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

HORSES

SHETLAND PONY

Judge: Graham Clark

(*To be judged at* 2 P.M. *on Tuesday*, 21*st June*)

(*All to be shown in hand*)

President's Champion Medal for best Shetland Pony

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
35/-	55/-	89	**Stallion**, not exceeding 10½ hands, born before 1929	8	5	3	2
35/-	55/-	90	**Entire Colt**, not exceeding 10½ hands, born in 1929 or 1930	8	5	3	2
35/-	55/-	91	**Mare**, not exceeding 10½ hands, with Foal at foot, or due to foal before 31st July 1932 . .	8	5	3	2
35/-	55/-	92	**Yeld Mare**, not exceeding 10½ hands . .	8	5	3	2
35/-	55/-	93	**Filly**, not exceeding 10½ hands, born in 1929 or 1930	8	5	3	2
			[1] **Best Group of Shetland Ponies**, drawn from the ordinary Classes, consisting of one male and two females	10	–	–	–
			[2] **Silver Medal** for the best Shetland Pony of the sex opposite to that of the winner of the President's Medal, entered or eligible for entry in the Shetland Pony Stud-Book.				

PRIZE MONEY BY SOCIETY . .	£90
CONTRIBUTED PRIZES .	10

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[1] Given by "Four Lovers of the Breed," per Mr W. Mungall of Transy.
[2] Given by the Shetland Pony Stud-Book Society.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

HORSES

SADDLE CLASSES

Judge: James J. Paterson

(*To be judged by the Hunter Judge at* 4 P.M. *on Wednesday*, 22*nd June*)

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First £	PREMIUMS Second £	PREMIUMS Third £	PREMIUMS Fourth £
20/-	30/-	94	**Mare or Gelding,** any age, over 13.2 hands, and not exceeding 15.2 hands—*in saddle* . . .	5	3	2	–
20/-	30/-	95	**Mare or Gelding,** any age, not exceeding 13.2 hands —*in saddle*	5	3	2	–

PRIZE MONEY BY SOCIETY . . £20

[Ponies in the above Classes must be in the Showyard not later than 10 A.M. on Wednesday. Exhibited Wednesday, Thursday, and Friday.]

PRIZE MONEY BY SOCIETY .	£734 0
CONTRIBUTED . . .	80 0
CUPS, MEDALS, &C. . . .	530 10
Total Prizes for Horses .	**£1344 10**

[See Note as to **EXTRA STOCK,** p. 133.]

JUMPING COMPETITIONS

SPECIAL REGULATIONS

(See also the Regulations on pages 84 *to* 94)

1. Jumping Competitions will take place on the afternoons of Wednesday, Thursday, and Friday, 22nd, 23rd, and 24th June, and on the evening of Thursday, 23rd June.
2. *Entries* for each afternoon Competition will close at the Secretary's Office in the Showyard at 5 P.M. on the preceding day. Entries for Evening Jumping may be received until 5 P.M. on the evening of the Competition.
3. *Entry Fees.*—Wednesday and Thursday afternoons, £1; Friday, 10s. Evening Jumping, 10s.
4. *Accommodation* for jumping horses will be provided as follows: Covered shed in which to stand during the day free of charge; or, on application to the Secretary not less than ten days before the opening of the Show, loose-boxes will be provided at a charge (in addition to the Entry Fee) of £1, which must be paid along with the Entry Fee at the time of application.
5. Horses entered for jumping only need not enter the Showyard till 12 noon on the day of Competition, and may leave the Showyard at the close of the jumping.
6. *The Jumps* may consist of Single Hurdle, Gate, Double Hurdle, Wall, and Water Jump, power being reserved by the Society to alter these, as well as the Handicaps, as may be thought desirable.

ENTRY FEE	*CLASS*		*First*	*Second*	*Third*	*Fourth*	*Fifth*
		WEDNESDAY.	£	£	£	£	£
		AFTERNOON.					
20/-	1	Horse or Pony, any height	20	15	10	5	3
		THURSDAY.					
		AFTERNOON.					
20/-	2	**Horse or Pony**, any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in Class 1	20	15	10	5	3
		EVENING.					
10/-	3	Horse or Pony, any height	10	8	5	3	2
		FRIDAY.					
10/-	4	**Horse or Pony**, any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in either of Classes 1 or 2—4 inches extra for the winner of the two first prizes in Classes 1 and 2	15	10	5	3	2
		Champion Prize for most points in Prizes with *one horse* in Classes 1, 2, and 4—First Prize to count five points; Second Prize, four points; Third Prize, three points; Fourth Prize, two points; and Fifth Prize, one point—the money to be evenly divided in the event of a tie . .	10	–	–	-	-
		Total Prize Money for Jumping, £179					

Special Entry Forms for above Competitions to be had on application.

SHEEP

*BLACKFACE

Judges—
Males, excluding Tup Lambs, L. D. M'Laren
Females and Tup Lambs, T. M. Macmillan

Prince of Wales Champion Gold Medal for best Blackface Sheep

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First £	PREMIUMS Second £	PREMIUMS Third £	PREMIUMS Fourth £
15/-	25/-	96	**Tup** three shear and over	12	8	4	2
15/-	25/-	97	**Tup** two shear	12	8	4	2
15/-	25/-	98	**Shearling Tup**	12	8	4	2
15/-	25/-	99	**Tup Lamb**	5	3	2	-
15/-	25/-	100	**Ewe above one shear** (born before 1931), unclipped, with Lamb at foot	10	5	3	2
15/-	25/-	101	**Shearling Ewe or Gimmer** (born in 1931)	10	5	3	2

[1] **Silver Cup,** value £25, to be awarded to the Breeder of the best Male Animal. "Extra Stock" eligible to compete.

[1] **Gold Medal,** value £5, to be awarded to the Breeder of reserve Male Animal. "Extra Stock" eligible to compete.

[1] **Silver Cup,** value £25, to be awarded to the Breeder of the best Female Animal. "Extra Stock" eligible to compete.

[1] **Gold Medal,** value £5, to be awarded to the Breeder of reserve Female Animal. "Extra Stock" eligible to compete.

PRIZE MONEY BY SOCIETY . . **£128**

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* Formal Declarations must be made at time of entry that the conditions as regards clipping, &c., have been strictly adhered to.

[1] Given by the Blackface Sheep-Breeders' Association.

SHEEP

CHEVIOT

Judge : John S. Dickson

Prince of Wales Champion Gold Medal for best Cheviot Sheep

ENTRY FEES		CLASS		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
15/-	25/-	102	**Tup** above one shear	12	8	4	2
15/-	25/-	103	**Shearling Tup**	12	8	4	2
15/-	25/-	104	**Tup Lamb**	5	3	2	-
15/-	25/-	105	**Ewe** above one shear, with Lamb at foot	10	5	3	2
15/-	25/-	106	**Shearling Ewe or Gimmer**	10	5	3	2
15/-	25/-	107	**Ewe Lamb**	5	3	2	-

[1] **Borthwick Perpetual Challenge Cup**, value £25, gifted by Mr J. Borthwick, for best Sheep in the Cheviot Classes.

[1] **Gold Medal**, or its value of 7 Guineas, to the best animal of the sex opposite to that of the winner of the Borthwick Perpetual Challenge Cup.

PRIZE MONEY BY SOCIETY . . £112

NORTH COUNTRY CHEVIOT SHEEP

Judge : John B. Sproat

President's Champion Medal for best North Country Cheviot Sheep

Members	*Non-Members*	CLASS		*First*	*Second*	*Third*	*Fourth*
15/-	25/-	108	**Tup** above one shear	8	5	3	-
15/-	25/-	109	**Shearling Tup**	8	5	3	-
15/-	25/-	110	**Ewe** above one shear, with Lamb at foot	8	5	3	-
15/-	25/-	111	**Shearling Ewe or Gimmer**	8	5	3	-

PRIZE MONEY BY SOCIETY . . £54

[2] CONTRIBUTED . . . 10

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[1] Given by Cheviot Sheep Society.

[2] Given by Northern Cheviot Sheep-Breeders' Club.

SHEEP

BORDER LEICESTER

Judge : John Kinnaird

Prince of Wales Champion Gold Medal for best Border Leicester Sheep

Entry Fees *Members*	*Entry Fees* *Non-Members*	*Class*		*Premiums* *First* £	*Premiums* *Second* £	*Premiums* *Third* £	*Premiums* *Fourth* £
15/-	25/-	112	**Tup** above one shear	12	8	4	2
15/-	25/-	113	**Shearling Tup**	12	8	4	2
15/-	25/-	114	**Tup Lamb**	8	5	3	-
15/-	25/-	115	**Ewe** above one shear	10	5	3	2
15/-	25/-	116	**Shearling Ewe or Gimmer**	10	5	3	2
15/-	25/-	117	**Ewe Lamb**	5	3	2	–

[1] **Renfrewshire Perpetual Gold Challenge Cup,** value £250, for best Border Leicester Sheep, Extra Stock" being eligible to compete.

[2] **Tweeddale Gold Medal,** value £25, for best Border Leicester Tup.

[3] **Silver Cup,** value £10, 10s., to be awarded to the Exhibitor of the best Group, consisting of one aged Tup, one Shearling Tup, one aged Ewe, and one Shearling Ewe or Gimmer, the females must be bred by Exhibitor—*drawn from above Classes.*

[3] **Gold Medal** for best Male Animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible.

[3] **Gold Medal** for best Female Animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible.

PRIZE MONEY BY SOCIETY . . £118

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[1] This Cup, along with an endowment of £500, was provided from money collected in Renfrewshire by the late Provost Muir M'Kean of Paisley, and is in commemoration of the Society's first Show in the county of Renfrew in 1913. This year the Cup is offered for the best Border Leicester Sheep. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

[2] Annual Free Income from Fund of £500.

[3] Given by the Society of Border Leicester Sheep Breeders.

SHEEP

HALF-BRED

Judge : James H. Mauchlin

Prince of Wales Champion Silver Medal for best Half-Bred Sheep

ENTRY FEES		CLASS		PREMIUMS		
Members	Non-Members			First	Second	Third
				£	£	£
15/-	25/-	118	**Shearling Tup**	10	7	3
15/-	25/-	119	**Ewe** above one shear	10	5	2
15/-	25/-	120	**Shearling Ewe or Gimmer**	10	5	2
15/-	25/-	121	**Ewe Lamb**	5	3	2

PRIZE MONEY BY SOCIETY . . £64

OXFORD DOWN

Judge : John T. Eady

(*All sheep to be entered or eligible for entry in the Flock-Book*)

Prince of Wales Champion Gold Medal for best Oxford Down Sheep

ENTRY FEES		CLASS		PREMIUMS		
Members	Non-Members			First	Second	Third
15/-	25/-	122	**Shearling Tup**	8	5	3
15/-	25/-	123	**Shearling Ewe or Gimmer**	8	5	3
15/-	25/-	124	**Tup Lamb**	8	5	3
15/-	25/-	125	**Ewe Lamb**	5	3	2

[1] **Scottish Oxford Down Sheep-Breeders' Challenge Bowl**, value £50, for the best Oxford Down Animal bred in Scotland, to be won three times by the same owner, but with different sheep, before becoming his property.

PRIZE MONEY BY SOCIETY . . £37

[1] CONTRIBUTED PRIZES . . . 21

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[1] Given by Oxford Down Sheep-Breeders' Association.

SHEEP

SUFFOLK

Judge: W. C. Jackson

(*All sheep to be entered or eligible for entry in the Flock-Book*)

Prince of Wales Champion Gold Medal for best Suffolk Sheep

ENTRY FEES		*CLASS*		*PREMIUMS*		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
15/-	25/-	126	**Tup** one shear and over . . .	8	5	3
15/-	25/-	127	**Shearling Ewe or Gimmer**	8	5	3
15/-	25/-	128	**Tup Lamb**	8	5	3
15/-	25/-	129	**Ewe Lamb**	5	3	2

[1]**Silver Challenge Cup,** value £15, offered by the Suffolk Sheep Society for best Group of Suffolk Sheep, consisting of one Tup, one shear and over, one Shearling Ewe or Gimmer, one Tup Lamb, and one Ewe Lamb, the Females and Tup Lamb must be bred by Exhibitor—*drawn from above Classes.* The Cup to become the property of an Exhibitor winning it three times, not necessarily in succession.

PRIZE MONEY BY SOCIETY . . £58

SHROPSHIRE

Judge: C. L. Coxon

Prince of Wales Champion Silver Medal for best Shropshire Sheep

Members	*Non-Members*	*CLASS*		*First*	*Second*	*Third*
15/-	25/-	130	**Tup,** any age	6	4	2
15-/	25/-	131	**Ewe or Gimmer**	5	3	2

PRIZE MONEY BY SOCIETY . . £22

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[1] Given by the Suffolk Sheep Society.

SHEEP

DORSET HORN

Judge : Reginald E. Bennett

Prince of Wales Champion Silver Medal for best Dorset Horn Sheep

ENTRY FEES		*CLASS*		*PREMIUMS*		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
15/-	25/-	132	**Tup,** any age	6	4	2
15/-	25/-	133	**Ewe or Gimmer**	5	3	2

PRIZE MONEY BY SOCIETY	£17
[1] CONTRIBUTED PRIZES	5

FAT SHEEP

Prince of Wales Champion Silver Medal for best pen of Fat Sheep

Judge : James H. Mauchlin

Members	*Non-Members*	*CLASS*		*First* £	*Second* £	*Third* £
15/-	25/-	134	**Three Fat Lambs,** any breed or cross, dropped in the year of the Show	5	3	2

[Exhibitors of Fat Sheep must state the breed of sire and dam when making their entries.]

PRIZE MONEY BY SOCIETY	£10

PRIZE MONEY BY SOCIETY	£620	0
CONTRIBUTED	36	0
CUPS, MEDALS, &c.	462	17
Total Prizes for Sheep	**£1118**	**17**

[See Note as to EXTRA STOCK, p. 133.]

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[1] Given by the Dorset Horn Sheep-Breeders' Association.

GOATS

Judge: Mrs G. M. Soames

REGULATIONS FOR GOAT CLASSES.

The animals will be milked dry at 6 o'clock on the evening previous to the opening of the Show, in the presence of, and to the satisfaction of, the Steward or a representative of the Society duly authorised by him.

All exhibits must be registered either in the Herd-Book, Foundation Book or Show Register of the British Goat Society, in the name of the Exhibitor (the registered number being quoted on the entry form), or, if previously entered or owned by some one other than the Exhibitor, a transfer of ownership must be registered with the British Goat Society.

Prince of Wales Champion Silver Medal for best Animal in the Goat Classes

(All animals must be registered)

ENTRY FEES		CLASS		PREMIUMS		
Members	*Non-Members*			*First* £	*Second* £	*Third* £
5/-	10/-	135	**Female Goat,** Toggenburg, British Toggenburg, or British Alpine, in Milk . . .	3	2	1
5/-	10/-	136	**Female Goat,** Saanen or British Saanen, in Milk .	3	2	1
5/-	10/-	137	**Female Goat,** any other variety, in Milk . .	3	2	1
5/-	10/-	138	**Goatling,** Toggenburg, British Toggenburg, or British Alpine, over one but not exceeding two years	3	2	1
5/-	10/-	139	**Goatling,** any other variety, over one but not exceeding two years	3	2	1
5/-	10/-	140	**Female Kid,** any variety, not exceeding one year .	3	2	1
5/-	10/-	141	**Male Kid,** any variety, not exceeding one year .	3	2	1
5/-	10/-	142	**Milking Competition,** for quality, open to Classes 135, 136, and 137 . . .	3	2	1
5/-	10/-	143	**Milking Competition,** for quantity, open to Classes 135, 136, and 137 . . .	3	2	1

The Competition for Goats is recognised by the British Goat Society, Roydon Road, Diss, Norfolk, which will give Challenge Certificates (qualifying for a Championship) for the best Female Goat over two years that has borne a kid; for the best dual purpose Goat over two years that has borne a kid; and Breed Challenge Certificates for best Toggenburg, Saanen, British Alpine, British Saanen, British Toggenburg, and Anglo-Nubian Female Goat over two years that has borne a kid; a Bronze Medal for the best female exhibit in Classes 135 to 140 inclusive.

ENTRY FEES		CLASS		PREMIUMS		
Members	Non-Members			First	Second	Third
				£	£	£

GOATS

[1] **Challenge Cup**, value 20 Guineas, for the best Female Goat in the Show.

[2] **Challenge Cup**, value £10, for best Female Anglo-Nubian Goat over two years old, in Milk, entered in the Anglo-Nubian section of the Herd-Book, "Extra Stock" being eligible to compete.

REGULATIONS FOR MILKING COMPETITION (CLASSES 142 AND 143).

Goats entered for this Competition must be entered in both the Quality and Quantity Classes.

The animals will be milked at 5 P.M. on Tuesday, 21st June, at an appointed place in the order arranged by the Steward, and the milk of the next twenty-four hours will be taken for the Quality and Quantity Milking Competitions. The hours of milking shall be 8 A.M. and 5 P.M. on Wednesday, 22nd June.

All Goats must have kidded within twelve months of the first day of the Show.

The prizes will be awarded according to the following scale of points:—

For each pound of milk . . .	1 point.
For each complete 6 days the Goat has been in milk (omitting the first forty days), with a maximum of 5·4 points .	$\frac{1}{10}$ of a point.
For each ½ lb. of fat in the milk . .	5 points.

In cases where the milk contains less than 3 per cent of fat 1 point will be deducted.

In the Quantity Milking Competition points will be awarded for quantity and lactation only.

The period of lactation to be calculated from the date of kidding to the first day of the Show. No prize will be awarded to a Goat giving less than 5½ lbs. of milk per day.

Fractions of lbs. of milk and percentages of fat to be worked out in decimals and added to the total points.

A Certificate giving the last date of kidding, signed by the owner of the Goat exhibited, or his Agent, must in every case be brought to the Steward of Goats as soon as possible after the animal has arrived in the Showyard.

The milk yielded by Goats in the Showyard shall be the property of the Society.

***Note.*—No animal is allowed to compete in more than one Class, except that Goats entered in Classes 135, 136, and 137 may also be entered in Classes 142 and 143.**

PRIZE MONEY BY SOCIETY	£42 0
DEPARTMENT OF AGRICULTURE FOR SCOTLAND	12 0
CUPS	31 0
Total Prizes for Goats . .	**£85 0**

[See Note as to **EXTRA STOCK**, p. 133.]

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[1] Given by the late Lord Dewar, London—to be competed for annually.

[2] Given by Mrs S. Macdonald—to be competed for annually.

*PIGS

LARGE WHITE

Judge: C. L. Coxon

(*All Large White Pigs to be entered or eligible for entry in the Herd-Book of the National Pig-Breeders' Association*)

Prince of Wales Champion Gold Medal for best Large White Pig

ENTRY FEES		CLASS		PREMIUMS		
Members	Non Members			First	Second	Third
				£	£	£
15/-	25/-	144	**Boar** born before 1931	8	4	2
15/-	25/-	145	**Boar** born in 1931	8	4	2
15/-	25/-	146	**Boar** born in 1932	6	3	1
15/-	25/-	147	**Sow** born before 1931	8	4	2
15/-	25/-	148	**Sow** born in 1931	8	4	2
15/-	25/-	149	**Sow** born in 1932	6	3	1

[1]**Gold Medal**, value £5 (or cash), for best Large White Boar.

[1]**Gold Medal**, value £5 (or cash), for best Large White Sow.

Prize Money by Society . . £71
[1] Contributed 5

MIDDLE WHITE

Judge: John T. Eady

(*All Middle White Pigs to be entered or eligible for entry in the Herd-Book of the National Pig-Breeders' Association*)

Prince of Wales Champion Gold Medal for best Middle White Pig

ENTRY FEES		CLASS		PREMIUMS		
Members	Non Members			First	Second	Third
15/-	25/-	150	**Boar** born before 1932	8	4	2
15/-	25/-	151	**Boar** born in 1932	6	3	1
15/-	25/-	152	**Sow** born before 1932	8	4	2
15/-	25/-	153	**Sow** born in 1932	6	3	1

[1]**Silver Gilt Medal**, value £2, 10/-, for best Middle White Boar.

[1]**Silver Gilt Medal**, value £2, 10/-, for best Middle White Sow.

Prize Money by Society . . £48

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* See Rule 35.

[1] Given by the National Pig-Breeders' Association.

PIGS

LARGE BLACK

Judge: John H. Glover

Prince of Wales Champion Gold Medal for best Large Black Pig

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First £	PREMIUMS Second £	PREMIUMS Third £
15/-	25/-	154	**Boar** born before 1932	8	4	2
15/-	25/-	155	**Boar** born in 1932	6	3	1
15/-	25/-	156	**Sow** born before 1931	8	4	2
15/-	25/-	157	**Sow** born in 1931	8	4	2
15/-	25/-	158	**Sow** born in 1932	6	3	1

[1] **Silver Challenge Cup**, value 12 Guineas, for best Large Black Boar or Sow owned by an Exhibitor resident in Scotland, and to become the property of an Exhibitor winning it twice in succession or three times at intervals.

[1] **Silver Medal** for the best Large Black Boar.

[1] **Silver Medal** for the best Large Black Sow.

PRIZE MONEY BY SOCIETY	£44
[1] CONTRIBUTED PRIZES	18

	£	s.
PRIZE MONEY BY SOCIETY	£163	0
CONTRIBUTED	23	0
CUPS, MEDALS, &c.	27	12
Total Prizes for Pigs	£213	12

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[1] Given by Large Black Pig Society.

EXTRA STOCK

(FORMER WINNERS AND STOCK NOT ELIGIBLE FOR ORDINARY CLASSES).

Animals not included in the Classes for Competition may be exhibited as Extra Stock, and may receive Awards as follows: the Silver Medal, the Medium Silver Medal, and the Bronze Medal.

Animals entered as Extra Stock are eligible to compete for the President's Medals, whether former winners of these Medals or not. They are also eligible to compete for Special Prizes where the conditions of these Prizes permit.

While every endeavour will be made to see that former winners are correctly entered in the Catalogue as "Extra Stock," the Society accepts no responsibility for this, it being the duty of Exhibitors to state clearly on the Entry Form the Show at which the animal became disqualified for the Ordinary Classes. If an animal appears in the Catalogue as entered in an Ordinary Class which should appear as "Extra Stock," it cannot thereafter be transferred to the "Extra Stock" Section.

Entry Fees—same as corresponding Classes.

*POULTRY

Judges: H. Inman, Classes 1 to 10, 15 to 18, 49 to 52, 73 to 76, 85 to 92, 97 to 109; John Meikle, Classes 11 to 14, 19 to 34, 61 to 72, 126 to 130; H. S. Anthony, Classes 35 to 48, 53 to 60, 77 to 84, 93 to 96, 110 to 125.

[1] **Champion Challenge Silver Salver,** value £30, for the best exhibit in the Poultry Classes.

First Premium—Twenty Shillings; *Second Premium*—Ten Shillings. In each Class in which there are four or more entries a Third Prize of Five Shillings may be awarded, provided there is sufficient merit in the pens. In addition to the Premiums, the Judges may award *one* Very Highly Commended, *one* Highly Commended, and as many Commended tickets in each Class as they consider justified by the number and merit of the entries.

Champion Silver Medals are offered as follows:—

1. Best Cock, any Variety.
2. Best Hen, any Variety.
3. Best Cockerel, any Variety.
4. Best Pullet, any Variety.
5. Best Waterfowl.
6. Best Turkey.
7. Best Utility Bird (Classes 97-109).

Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.

Entry Fees—Members, 2s. 6d.; Non-Members, 4s.

	Class	
Leghorn—		
White	1.	Cock
	2.	Hen
	3.	Cockerel
	4.	Pullet
Exchequer	5.	Cock or Cockerel
	6.	Hen or Pullet
Any other Colour	7.	Cock
	8.	Hen
	9.	Cockerel
	10.	Pullet
Minorca	11.	Cock
	12.	Hen
	13.	Cockerel
	14.	Pullet
Hamburgh	15.	Cock
	16.	Hen
	17.	Cockerel
	18.	Pullet
Scotch Grey	19.	Cock
	20.	Hen
	21.	Cockerel
	22.	Pullet
Plymouth Rock—		
Barred	23.	Cock
	24.	Hen
	25.	Cockerel
	26.	Pullet
Any other Colour	27.	Cock or Cockerel
	28.	Hen or Pullet

	Class	
Orpington—		
Black	29.	Cock
	30.	Hen
Any other Colour	31.	Cock
	32.	Hen
Any Colour	33.	Cockerel
	34.	Pullet
Wyandotte—		
Gold or Silver	35.	Cock
	36.	Hen
	37.	Cockerel
	38.	Pullet
White	39.	Cock
	40.	Hen
	41.	Cockerel
	42.	Pullet
Partridge	43.	Cock or Cockerel
	44.	Hen or Pullet
Columbian	45.	Cock or Cockerel
	46.	Hen or Pullet
Any other Colour	47.	Cock or Cockerel
	48.	Hen or Pullet
Rhode Island Red	49.	Cock
	50.	Hen
	51.	Cockerel
	52.	Pullet

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[1] Given by the late Lord Dewar. The Salver will become the property of an exhibitor who shall win it three times, not necessarily in succession.

Special Entry Forms for Poultry Classes.

* See Regulations 66 and 67.

SUSSEX—	Class
Light	53. Cock
	54. Hen
	55. Cockerel
	56. Pullet
Any other Variety	57. Cock
	58. Hen
	59. Cockerel
	60. Pullet
DORKING—	
Coloured	61. Cock
	62. Hen
	63. Cockerel
	64. Pullet
Silver Grey	65. Cock
	66. Hen
	67. Cockerel
	68. Pullet
SCOTS DUMPY	69. Cock
	70. Hen
	71. Cockerel
	72. Pullet
BARNEVELDER	73. Cock
	74. Hen
	75. Cockerel
	76. Pullet
INDIAN GAME	77. Cock
	78. Hen
	79. Cockerel
	80. Pullet
OLD ENGLISH GAME	81. Cock
	82. Hen
	83. Cockerel
	84. Pullet
BANTAM—	
Game—Old English	85. Cock
	86. Hen
Game—Modern	87. Cock
	88. Hen
Other than Game	89. Cock
	90. Hen
Any Variety	91. Cockerel
	92. Pullet
ANY OTHER RECOGNISED BREED OF POULTRY	93. Cock
	94. Hen
	95. Cockerel
	96. Pullet

UTILITY POULTRY—	Class
Leghorn—any Variety	97. Cock or Cockerel
Any other Variety—light breed	98. Cock or Cockerel
Wyandotte—any Colour	99. Cock or Cockerel
Any other Variety—heavy breed	100. Cock or Cockerel
Leghorn—White	101. Hen or Pullet
Leghorn—any other Colour	102. Hen or Pullet
Wyandotte—any Colour	103. Hen or Pullet
Rhode Island Red	104. Hen or Pullet
Barnevelder	105. Hen or Pullet
Rock—any Colour	106. Hen or Pullet
Any other Variety	107. Hen or Pullet
ANY CROSS FOR LAYING PURPOSES	108. Hen
ANY CROSS FOR LAYING PURPOSES	109. Pullet
DUCKS—	
Aylesbury	110. Drake
	111. Duck
	112. Drake (young)
	113. Duck (young)
Orpington	114. Drake
	115. Duck
	116. Drake (young)
	117. Duck (young)
Indian Runner	118. Drake
	119. Duck
Any other Variety	120. Drake
	121. Duck
GEESE	122. Gander
	123. Goose
TURKEYS	124. Cock
	125. Hen
TABLE POULTRY—	
Any pure Breed	126. Cock
	127. Cockerel
Any Cross	128. Cock
	129. Cockerel
Any Pure Breed or Cross	130. Pair of Pullets

AMOUNT OF POULTRY PREMIUMS, £227, 10s.

Special Entry Forms for Poultry Classes.

EGGS

Judge : Alexander F. Smith

Entry Fee—2s. 6d.

Class.		Premiums, 1st.	2nd.	3rd.
1.	One dozen Hen Eggs—white	£1	15/-	10/-
2.	One dozen Hen Eggs—brown or tinted	£1	15/-	10/-
3.	One dozen Duck Eggs	£1	15/-	10/-
4.	One dozen Turkey Eggs	£1	15/-	10/-

PRIZE MONEY BY SOCIETY, £9.

REGULATIONS.

1. All eggs must be fresh, and must be the produce of poultry the property of the exhibitor.

2. Eggs will be received at the Dairy Produce Shed in the Showyard on Monday, the day before the opening of the Show, and till 8 A.M. on Tuesday, the first day of the Show. Judged at 9.30 A.M. on Tuesday,

3. Eggs will be exhibited on suitable plates provided by the Society.

4. Eggs may be removed by exhibitors at the close of the Show ; where this is not done eggs will be returned only if a suitable box is provided for the purpose, and the necessary postage or carriage thereon is prepaid.

FUR-PRODUCING RABBITS

(*To be judged at* 10 A.M. *on Wednesday, 22nd June*)

Judge : Harry Tarbox

REGULATIONS.

Rabbits must be brought to the Showyard between 5 P.M. and 9 P.M. on Tuesday, the first day of the Show. No lot will be admitted without an Admission Order. Pens, food, and attendance will be found by the Society.

Rabbits may be penned on Tuesday evening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor an authorised representative of the Exhibitor being present to pen or remove Rabbits, they will be penned and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to Exhibits by errors or accidents in penning, despatching, or conveying Exhibits.

On the Wednesday, the second day of the Show, the Rabbit Shed will be closed to the public during the Judging. On the last day of the Show the Rabbit Shed will be closed to the public at 4 P.M.; at 5 P.M. Exhibitors or their representatives will be admitted to the Shed to remove Exhibits, provided the Exhibitor has, *not later than* 11 A.M. *on the last day of the Show,* given written notice to the Secretary to the effect that the Exhibitor or the Exhibitor's representative will attend at the Rabbit Shed at 5 P.M. to remove the Rabbits.

Champion Silver Medal for best exhibit in the Rabbit Classes.

First Premium—FIFTEEN SHILLINGS; *Second Premium*—TEN SHILLINGS; *Third Premium*—FIVE SHILLINGS. In each Class in which there are less than four entries the Third Prize of Five Shillings will not be awarded; where there are ten or more entries a Fourth Prize of 2s. 6d. may be awarded. In addition to the Premiums, the Judges may award *one* Very Highly Commended, *one* Highly Commended, and as many Commended tickets in each Class as they consider justified by the number and merit of the entries.

Class.
1. Angora, over 5 months.
2. Angora, not exceeding 5 months.
3. Chinchilla, Buck, over 5 months.
4. Chinchilla, Doe, over 5 months.
5. Chinchilla, Buck or Doe, not exceeding 5 months.
6. Beveren, over 5 months.
7. Beveren, not exceeding 5 months.
8. Rex, any colour, over 5 months.
9. Rex, any colour, not exceeding 5 months.
10. Havana, over 5 months.
11. Sable Marten, over 5 months.
12. Sable Marten, not exceeding 5 months.
13. Sable Siamese, over 5 months.
14. Sable Siamese, not exceeding 5 months.
15. Squirrel, over 5 months.
16. Silver Fox, any colour, over 5 months.
17. Silver Fox, any colour, not exceeding 5 months.
18. Any variety, over 5 months, for which a class is not provided.
19. Any variety, not exceeding 5 months, for which a class is not provided.

Entry Fee—2s. 6d. each rabbit.

PRIZE MONEY BY SOCIETY . . . . . . £30, 17s. 6d.

Special Entry Forms for Rabbit Classes.

HONEY, &c.

Judge: W. E. Hamlin

(*To be judged at* 11 A.M. *on Tuesday*, 21*st June*)

OPEN CLASSES

Entry Fees—2s. 6d. each.

Class.		Premiums. 1st.	2nd.	3rd.
1.	Collection of Appliances suitable for a beginner's outfit for Bee-keeping. A card naming all the articles, along with the price at which they will be supplied for one year from date, to be fixed to the exhibit	20/-	15/-	10/-
2.	Best and most complete Frame Hive for general use, with any improvements. Unpainted	20/-	15/-	10/-
3.	Best and most complete Hive. Unpainted. Price not to exceed 35/-	20/-	15/-	10/-
4.	Six Sections of Comb Honey, excluding Heather Honey	20/-	15/-	10/-
5.	Six Sections of Heather Honey	20/-	15/-	10/-
6.	Six Jars of Run or Extracted Light-coloured Honey, approximate weight 6 lb.	20/-	15/-	10/-
7.	Six Jars of Run or Extracted Medium or Dark-coloured Honey, excluding Heather Honey, approximate weight 6 lb.	20/-	15/-	10/-
8.	Six Jars of pressed Heather Honey in liquid form, approximate weight 6 lb.	20/-	15/-	10/-
9.	Six Jars of Granulated Honey, approximate weight 6 lb.	20/-	15/-	10/-
10.	Two shallow Frames of Comb Honey for extracting purposes	20/-	15/-	10/-
11.	Products made with the aid of Honey. (Recipe to be attached, which will be treated as confidential)	20/-	15/-	10/-
12.	Best display of Honey in any form suitable for a shop window in space 4 feet by 4 feet. Weight of honey not to exceed 40 lb.	60/-	30/-	20/-
13.	Best exhibit of not less than 1 lb. of Wax in any form	20/-	15/-	10/-
14.	Best exhibit of not less than 1 lb. of Wax made into shapes for retail trade and over-counter trade. Convenience in packing to be taken into consideration	20/-	15/-	10/-
15.	Observatory Hive with Queen and Bees—two or more frames	50/-	30/-	20/-
16.	Observatory Hive with Queen and Bees—one frame, no super	40/-	30/-	15/-

(Confined to Scottish Exhibitors.)

17.	One Standard Frame of Comb Honey for extracting purposes	20/-	15/-	10/-
18.	Six Sections of Comb Honey, excluding Heather Honey	20/-	15/-	10/-
19.	Six Sections of Heather Honey	30/-	20/-	10/-
20.	Six Jars of Run or Extracted Medium or Dark-coloured Honey, excluding Heather Honey, approximate weight 6 lb.	30/-	20/-	10/-
21.	Six Jars of Run or Extracted Light-coloured Honey, approximate weight 6 lb.	30/-	20/-	10/-

Silver and Bronze Medals will be awarded by the Scottish Bee-Keepers' Association to the First and Second winners of the greatest number of points in the Classes for Honey and Wax only, calculated on the following basis: 1st prize, 3 points; 2nd prize, 2 points; 3rd prize, 1 point.

Championship Cup, value £5, 5s.—This cup has been gifted by the Rev. John Beveridge, M.B.E., B.D., Edinburgh, and will be held for one year by the winner of the Silver Medal, ultimately becoming the property of the first competitor to score 100 points.

PRIZE MONEY BY SOCIETY	£47, 0s. 0d.
CONTRIBUTED BY SCOTTISH BEE-KEEPERS' ASSOCIATION	£10, 10s. 0d.
CHAMPIONSHIP CUP	£5, 5s. 0d.

Special Entry Forms for Appliances and Honey.

Rules and Regulations.

1. All exhibits must be despatched in time to be delivered at the Showyard not later than 6 P.M. on Monday, the day before the opening of the Show. According to the railway regulations, exhibitors will require to pay return carriage and cartage when despatching. Return carriage-paid labels will be supplied by the Secretary, and must be addressed for the return journey, and have numbers of Classes on same. Non-compliance with this regulation will mean that the exhibit will be left in the Showyard. **Boxes containing hives, jars, or sections must be *screwed* and not nailed, and the hives, bottles, and sections so placed that they can be lifted out and replaced without disturbing the packing.**

2. The number of the exhibit will be sent by the Secretary (as entered on the printed slip) and must be placed on every exhibit—viz., **Jars:** on side of jar about half an inch from the foot. **Sections** and **Frames:** at right top corner of the glass. **Wax:** at right top corner of the glass. Also on **1 lb. Cakes:** on the underside. No goods will be staged unless this rule is complied with. All competitors must leave the Bee Shed by 9 A.M. on Tuesday morning.

3. No card, trade mark, or name of the exhibitor may be placed upon any part of an exhibit. Every article exhibited must be the property of the exhibitor, and all honey must have been gathered in the natural way within Great Britain, Northern Ireland, and Irish Free State, by bees the property of the exhibitor.

4. Comb Honey Sections, 4½ inches by 4½ inches, to be staged in cardboard boxes glazed on both sides, showing not less than 3½ inches by 3½ inches of comb surface clear of points of lacing. Sections with fixed glass will be disqualified.

Shallow Frames,—no paper edging is permissible and each frame must be exhibited in a separate glazed case.

5. All Run, Extracted, and Granulated Honey must be shown in the usual mercantile Glass Jars holding approximately 1 lb., except in Class 12.

6. No exhibitor shall be allowed to take more than one prize in any one class.

7. The Judge shall be empowered to withhold prizes in case of insufficient merit.

8. Should there be in any class three or less than three entries, the value of the first prize may be reduced at the discretion of the Judge to that of the second, the second to that of the third, and no third prize will be awarded.

9. The Judge will commence his inspection at 11 A.M. on Tuesday, and the Bee Shed will be closed to the public during the judging.

10. Exhibits of Honey may be placed in their positions in the shed before the opening and removed at the close of the Show by exhibitors themselves or their representatives. In the event of neither the exhibitor nor a person with written authority from the exhibitor being present to place or remove the exhibits, they will be placed and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of the exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits. In the case of exhibits which are not removed by 5.30 P.M. on the closing day of the Show, the Society will hold itself at liberty to hand them over to the railway companies for despatch to the respective exhibitors.

11. No lot can be removed from the yard till 4 P.M. on Friday, the last day of the Show.

12. The Society undertakes no responsibility for the receipt or despatch of exhibits, nor for any injury exhibits may sustain during the Show or otherwise.

13. **Railway delivery charges from station to Showyard and back to be paid by exhibitor. See p. 102.**

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* DAIRY PRODUCE

Judge: Alexander Garvie

No Exhibitor to show more than **one lot** in any Class

Entry Fees—Members, 5s.; Non-Members, 7s. 6d.

	Premiums.				
	1st.	2nd.	3rd.	4th.	5th
Class.	£	£	£	£	£
1. Powdered Butter, not less than 3 lb.	4	2	1	-	-
2. Fresh Butter, three 1-lb. lots, to be made up in form of bricks	4	2	1	-	-
3. Cheddar Cheese, 56 lb. and upwards	9	5	3	2	1
4. Cheese, 14 lb. and under	5	3	2	1	-
Total .	£45				

Special Entry Forms for Dairy Produce.

* See Regulations 75 and 76.

Railway delivery charges from station to Showyard and back to be paid by exhibitor. See p. 102.

BUTTERMAKING COMPETITIONS

Judges: *Open and Novice Sections*—William Smith
Championship—William Burkitt

Entry Fee, 2s. 6d. each Competition.

The Society will hold an open Buttermaking Competition on Wednesday and Thursday, 22nd and 23rd June, and a Novice Competition on Friday, 24th June.

The Competitors will be balloted into sections containing, as nearly as possible, an equal number of Competitors, and each section will form a separate competition with separate prizes. The Secretary will forward to Competitors, a few days before the Competitions, a note of the days and hours at which they are required to attend.

The sections and prize money will be as follows :—

WEDNESDAY, 22ND JUNE.

Open Competition.

Section 1	£5, £3, £2, £1.
Section 2	£5, £3, £2, £1.

THURSDAY, 23RD JUNE.

Open Competition (continued).

Section 3	£5, £3, £2, £1.

Championship	*First :*	Gold Medal.
	Second :	Silver Medal.

Competitors in the Championship Competition will consist of the First, Second, and Third Prize Winners in each of the Sections 1 to 3 inclusive.

FRIDAY, 24TH JUNE.

Novice Competition (confined to Competitors who have never won a prize of greater value than £1 in Buttermaking Competitions)—

Section 1	£3, £2, £1.

Competitors will be distinguished by Numbers, which, with Competitor's name and address, will appear in the Catalogue.

The decision of the Directors of the Society in all matters relating to the Competition shall be final.

Entry forms may be obtained from the Secretary, or from Miss J. Macdonald, Hon. Secretary, British Dairymaids' Association, 16 Rutland Square, Edinburgh, who has kindly agreed to receive entries. These must be lodged *not later than Thursday, 26th May.*

WOOL

Judge : William Duncan

THREE *Fleeces in each Entry. Each fleece must be shown entire. Entry Fee*, 5s.

PURE BREED CLASSES

		Premiums.		
		1st.	2nd.	3rd.
Class	*BLACKFACE.	£	£	£
1.	*Ewe*	3	2	1
2.	*Hogg*	3	2	1
	CHEVIOT.			
3.	*Ewe*	3	2	1
4.	*Hogg*	3	2	1
	BORDER LEICESTER.			
5.	*Ewe*	3	2	1
6.	*Hogg*	3	2	1
	HALF-BRED.			
7.	*Ewe*	3	2	1
8.	*Hogg*	3	2	1
	OXFORD DOWN.			
9.	*Ewe*	3	2	1
10.	*Hogg*	3	2	1
	SUFFOLK.			
11.	*Ewe*	3	2	1
12.	*Hogg*	3	2	1
	DORSET HORN.			
13.	*Ewe*	3	2	1
14.	*Lamb*	3	2	1
	† SHETLAND.			
	Special Prizes to be awarded for Shetland Wool actually grown in Shetland	3	2	1
15.	*Ewe*	3	2	1
16.	*Hogg*	3	2	1

£102

TOTAL PRIZE MONEY FOR WOOL, £102.

Cheviot, Border Leicester, and Half-Bred Fleeces must be shown washed, and Blackface and Shetland Fleeces unwashed. All Fleeces must be from sheep bred and reared on, or regular stock of, exhibitor's farm, and, with the exception of Dorset Horn Lamb Wool, must be shorn in the year of the Show.

Special Entry Forms for Wool Classes.

* Blackface Ewe Fleeces shall be not less than 4½ lb., and Hogg Fleeces not less than 6 lb. in weight.

† An exhibit of Shetland Wool may comprise fleeces of one or more colours, but each fleece must be self-coloured.

Railway delivery charges from station to Showyard and back to be paid by exhibitor. See p. 102.

RURAL INDUSTRIES

Judges: David Forbes, Classes 1, 2, 3, 4, 16, 17, 23, 24; J. A. Campbell, Classes 5, 6; Miss D. Angus, Classes 7, 8, 9, 10, 18, 19, 22, 25; Miss M. B. Fulton, Classes 11, 12, 14, 15, 20, 21; Mrs E. Balfour Graham, Class 13.

Entry Fee, 2s. 6d. each article.
Late Fee, 5s. each article.

OPEN CLASSES.

SHETLAND KNITTING.

Class.	*Exhibits to be made from Shetland Wool.*	Premiums.			
		1st.	2nd.	3rd.	
1.	Fine Lace Goods (separate entry for each article)	£3	£2	£1	
2.	Dress, Jumper, Sports Coat, Cardigan, or Waistcoat—one or more colours	3	2	1	
3.	Dress, Jumper, Sports Coat, Cardigan, or Waistcoat—all over Fair Isle	3	2	1	
4.	Exhibits other than above (separate entry for each article)	2	1	10/-	
	TWEEDS.				
5.	Harris or other Tweed—Hand-spun, Hand-woven, and Vegetable-dyed	3	2	1	
6.	Tweed—Mill-spun, Hand-woven	3	2	1	
	MISCELLANEOUS.				
7.	Home-made Floor Rug (wool)	3	2	1	
8.	Specimen of Embroidery—white (to be exhibited unwashed)	3	2	1	
9.	Specimen of Coloured Embroidery—silk or cotton	3	2	1	
10.	Specimen of Coloured Embroidery—woolwork	3	2	1	
11.	Leather Gloves	2	1	10/-	
12.	Specimen of Leather Work other than Gloves	2	1	10/-	
13.	„ Furcraft	2	1	10/-	
14.	„ Hand-painted Pottery	2	1	10/-	
15.	„ Basket Work (Raffia not eligible)	2	1	10/-	
16.	Best collection of Vegetable-dyed Wools	2	1	10/-	
17.	Home-spun Yarn—2-3 cuts	2	1	10/-	
18.	Specimen of Filet-lace	3	2	1	
					£88 0

CONFINED CLASSES.

Open to Women's Rural Institutes and Members thereof in the whole of Scotland.

		Premiums.			
		1st.	2nd.	3rd.	
19.	Specimen of Quilting	£3	£2	£1	
20.	Article showing Chair-caning	3	2	1	
21.	Upholstered Work Box	3	2	1	
22.	Embroidered Shopping Bag	2	1	10/-	
					£21 10

RURAL INDUSTRIES—*continued.*

Confined to Women's Rural Institutes and Members thereof in the Northern and West Highland Areas of the Scottish Women's Rural Institutes.

	Premiums. 1st.	2nd.	3rd.	
23. Women's Stockings—4- or 5-ply fingering . .	£2	£1	10/-	
24. Knitted Jumper—4-ply fingering . . .	2	1	10/-	
25. Article showing home-made Applique work (design need not be original, but work bought ready stamped and prepared not eligible)	2	1	10/-	
				£10 10

Prize Money by Society	£88 0
Central Council of the Scottish Women's Rural Institutes, for Classes 19 to 25 . .	£32 0

Note.—(*a*) No exhibit may be entered in more than one Class.
(*b*) All exhibits must have been completed within the twelve months preceding the Show.

REGULATIONS.

1. The Competition, except where otherwise stated, is open to competitors from all parts of Great Britain, Northern Ireland, and Irish Free State. Societies or Institutes, as well as individuals, shall be allowed to compete.

2. Every exhibit must be the work either of the exhibitor or of a member of the exhibiting Society or Institute, and must have been completed within the twelve months preceding the Show.

3. An entry fee of 2s. 6d. for each exhibit is payable at the time of entry.

4. Exhibits will be received in the Showyard not later than 8 P.M. on Monday, the day before the opening of the Show. Judging will commence at 9.30 A.M. on Tuesday. The section will be closed to the public during the judging. Exhibits shall not be removed till after the close of the Show.

5. In no case shall a prize be awarded unless the Judge deems the exhibit to have sufficient merit; and where only one or two articles are entered in a class, and the Judge considers them unworthy of the prizes offered, it shall be in his or her power to award a lower prize.

6. Exhibits shall be entirely at the risk of exhibitors, who shall be solely responsible for delivery and removal of their own exhibits. In the event of neither the exhibitor nor a person with written authority from the exhibitor being present to place or remove exhibits, these will be placed and removed by men hired and paid by the Society; but this will be done on the understanding that the men are hired to do the work on behalf of the exhibitors and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits. A receipt signed by the exhibitor, on a form to be issued by the Secretary, must be delivered before any exhibit is handed over to the exhibitor or his or her representative.

7. Exhibitors shall be allowed to attach to their exhibits a notice indicating where (in the Showyard or elsewhere) similar articles may be purchased.

8. Exhibits must not be sent to the Society's Office previous to date of Show. Labels, &c., will be posted to Exhibitors about fourteen days prior to the Show.

9. All exhibits to be sent to the Showyard in packing, sufficiently strong, to be used for return.

10. **Railway delivery charges from station to Showyard and back to be paid by exhibitor. See p. 102.**

Special Entry Forms for Rural Industries Section.

HORSE-SHOEING AND SHOE-MAKING

Open to Shoeing-Smiths from any part of Great Britain, Northern Ireland, and Irish Free State.

Horses provided for this Competition cannot be entered in any other Class.

Special Entry Forms for Horse-Shoeing and Shoe-Making Competitions.

HORSE-SHOEING COMPETITION

Judges: Major William Logan, O.B.E.; J. J. Hamilton; John Bell

THURSDAY, 23RD JUNE.

Class 1.—FARM HORSES (Open Class).

1st Prize, £5 and Silver Tea Service.*
2nd Prize, £5 and Canteen of Cutlery.†
3rd Prize, £5 and Gold Medal.‡
4th Prize, £4 and Gold Medal.§
5th Prize, £3.
6th Prize, £2.
7th Prize, £2.
8th Prize, £1.
9th Prize, £1.

FRIDAY, 24TH JUNE.

Class 2.—FARM HORSES (Juniors under Twenty-five Years of Age).

1st Prize, £5 and Gold Watch.**
2nd Prize, £3 and Canteen of Cutlery.†
3rd Prize, £2 and Gold Medal.‡
4th Prize, £1.

* Silver Tea Service given by the Scottish Iron and Steel Co., Ltd., Glasgow.

** Gold Watch given by Messrs William Martin, Sons, & Co., Coatbridge.

† Canteens of Cutlery given by Messrs Neilson & Cleland, Ltd., Coatbridge.

‡ Gold Medals given by the Mustad Horse Nail Company.

§ Gold Medal given by Capewell Horse Nail Company.

Gold Medal, given by National Master Farriers' and Blacksmiths' Association, to be awarded to the competitor obtaining the highest number of points in Class 1.

PRIZE MONEY BY SOCIETY	£24
SILVER TEA SERVICE AND £10 BY THE SCOTTISH IRON & STEEL CO., LTD., GLASGOW	£15
GOLD WATCH AND £5 BY MESSRS WILLIAM MARTIN, SONS, & CO., COATBRIDGE	£10
CUTLERY BY MESSRS NEILSON & CLELAND, LTD., COATBRIDGE	£8
GOLD MEDAL BY NATIONAL MASTER FARRIERS' AND BLACKSMITHS' ASSOCIATION	£4
GOLD MEDALS BY MUSTAD HORSE NAIL CO. . .	£4
GOLD MEDAL BY CAPEWELL HORSE NAIL CO. . .	£2

1. Entries must be made with the Secretary not later than 28th April. Entry Fee, 2s. 6d. for each Class. Entry Forms may be had on application.

2. Competitors eligible to compete in the Junior Class may compete in either Senior or Junior Class, but not in both.

3. The Competition will take place in the Showyard, and will be decided by points, time being taken into consideration. Each Competitor must make and fix one fore and one hind shoe, having previously taken off the old shoes. The shoes must be fullered, with low calkins, and with toe-pieces on hind shoes only. The use of files and wire brushes is not permitted. Each Competitor must bring his own tools, nails, and a striker. The striker will not be allowed to touch the horse's hoof. The local Blacksmiths' and Farriers' Association will provide forges and anvils. The horses to be shod will be provided by the Association. Forges and horses will be balloted for.

4. Competitors must attend at the Horse-Shoeing Stance and answer to their names **half an hour before they are due to compete.**

5. The Competitor and his striker will be admitted to the Yard free of charge on the day of Competition on presentation of tickets which will be sent to the Competitor for the purpose.

The Waverley horse-shoe iron to be used in the Open Class, and the Dundyvan horse-shoe iron to be used in the Junior Class, will be supplied by Messrs Neilson & Cleland, Ltd., Coatbridge, who will also provide the necessary smithy coal.

SHOE-MAKING COMPETITION

Judges: J. J. Hamilton; John Bell

WEDNESDAY, 22ND JUNE.

1st Prize, £5; 2nd Prize, £4; 3rd Prize, £3; 4th Prize, £2; 5th Prize, £1.

PRIZE MONEY BY SOCIETY	£8
MESSRS WILLIAM MARTIN, SONS, & CO., COATBRIDGE .	£5
MESSRS NEILSON & CLELAND, LTD., COATBRIDGE .	£2

REGULATIONS.

1. Entries must be made with the Secretary not later than 28th April. Entry Fee, 2s. 6d. each entry. Entry Forms may be had on application.

2. Each Competitor must make one fore shoe and one hind shoe.

3. Each shoe must be made from $18\frac{1}{2}'' \times 1\frac{1}{4}'' \times \frac{9}{16}''$ iron, which will be provided at the Stance.

4. The fore shoe to be fullered and clipped, and the hind shoe fullered, clipped and toed.

5. The use of files and wire brushes is prohibited.

6. Time allowed will be limited to 40 minutes.

7. Competitors must bring their own tools and a striker, and must attend at Horse-Shoeing Stance **15 minutes before they are due to commence.**

8. The Competitor and his striker will be admitted to the Yard free of charge on the day of Competition on presentation of tickets which will be sent to the Competitor for the purpose.

The Dundyvan horse-shoe iron will be supplied by Messrs Neilson & Cleland, Ltd., Coatbridge.

LIVE STOCK JUDGING COMPETITION

1. The Society will hold a Live Stock Judging Competition on Thursday, 23rd June, commencing at 10.30 A.M.

2. The Competition shall be open to all persons not exceeding 23 years of age at the date of the Competition.

3. Teams from Agricultural Colleges or from Young Farmers' Clubs in Scotland shall be allowed to compete. The members of these teams shall also enter as individual Competitors. Five members shall form a team.

4. Entries must be lodged with the Secretary of the Highland and Agricultural Society not later than 10 A.M. on **Thursday, 19th May.** An entry fee of 2s. 6d. shall be paid by each Competitor. Entries of teams must be made in the same way, but no additional fee shall be charged for a Team over and above the fee of 2s. 6d. for each individual member.

5. The Stock to be judged shall consist of—

(*a*) Cattle (three classes) . .	Shorthorn. Aberdeen-Angus. Ayrshire or British Friesian.
(*b*) Horses (two classes) . .	Clydesdales.
(*c*) Sheep (three classes) . .	Blackface. Cheviot. Border Leicester.

There will be four animals in each class. The animals to be judged shall be chosen by the Society's Stewards. The Society reserves the right to modify the nature of the classes should difficulty arise in finding suitable material amongst the animals exhibited at the Show.

6. In Judging, breed type shall be taken into account. All stock shall be considered free from acquired blemishes or unsoundness. The Competitors shall judge in groups, and ten minutes shall be allowed for the judging of each class.

7. Competitors are forbidden to discuss the Stock with each other, or with any other person, until the conclusion of the whole Competition.

8. The method of awarding points shall be decided by the Directors of the Society, and their decision in all matters relating to the Competition shall be final.

9. Prizes shall be awarded as follows :—

Individual Competition . . .	£5, £4, £3, £2, £1.
Team Competition—	
1st	£10 and 5 Medium Silver Medals.
2nd	£5 and 5 Medium Bronze Medals.
Special Prize for College team placed highest in Competition . .	£5.

[1] **'Glasgow Herald' Challenge Cup**, value £50, to be awarded each year to the winning team in the Inter-College Contests.

[1] **Gold Medal** to be awarded to the highest individual scorer, irrespective of whether the winner is or is not a College Entrant.

The Society reserves the right to reduce the number of prizes in the event of there being less than twenty Competitors in the individual Competition and less than three teams in the team Competition.

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[1] Given by Messrs George Outram & Co., Ltd., Glasgow.

ABSTRACT OF PREMIUMS.

GIVEN BY THE SOCIETY.

Prince of Wales Gold and Silver Champion Medals	£230	0	0
Cattle	1352	0	0
Horses	734	0	0
Jumping Competitions	179	0	0
Sheep	620	0	0
Goats	42	0	0
Pigs	163	0	0
Poultry	227	10	0
Eggs	9	0	0
Fur-Producing Rabbits	30	17	6
Honey, &c.	47	0	0
Dairy Produce	45	0	0
Buttermaking Competitions	39	0	0
Wool	102	0	0
Rural Industries	88	0	0
Horse-Shoeing and Shoe-Making	32	0	0
Stock Judging Competition	35	0	0
Medals to Breeders, &c.	70	0	0
Horticultural	20	0	0
Forestry[1]	40	0	0
	£4105	7	6

CONTRIBUTED PRIZES, CUPS, &c.

His Grace The Duke of Portland, K.G., P.C., G.C.V.O.—Champion Medals	7	0	0

CATTLE.

*Paisley Perpetual Gold Challenge Cup	£300	0	0			
*The late Mr William Duthie—Silver Cup	150	0	0			
*Mr Emilio R. Casares, jun., London—Cup	50	0	0			
Tweeddale Gold Medal	25	0	0			
The Shorthorn Society (and 2 Medals)	40	0	0			
*Mr W. Gilchrist Macbeth—Silver Cup	50	0	0			
*The late Sir George Macpherson Grant, Bart.—Silver Cup	50	0	0			
*Mr Eduardo Estanguet, Argentina—Silver Cup	52	10	0			
*The late Sir John Macpherson Grant, Bart.—Silver Cup	50	0	0			
*Mr Falconer L. Wallace—Silver Cup	50	0	0			
Aberdeen-Angus Cattle Society—Gold Medal	10	0	0			
*Galloway Cattle Society—Dr Gillespie Memorial Trophy	50	0	0			
*Galloway Cattle Society—Silver Cup	50	0	0			
*Mrs Brown, Kirkbrex, Glasgow—Knockbrex Challenge Cup	50	0	0			
*Highland Cattle Society of Scotland—Silver Cups	89	5	0			
*Cowhill Champion Cup	30	0	0			
Ayrshire Cattle Herd-Book Society	20	0	0			
Messrs Brown & Polson, Ltd.	10	0	0			
*British Friesian Cattle Society—Silver Cup	52	10	0			
British Friesian Cattle Society	40	0	0			
*Lady Rachel Workman MacRobert—Champion Bell	52	10	0			
*The late Lt.-Colonel Charles Brook—Kinmount Challenge Cup	50	0	0			
Red Poll Cattle Society	20	0	0			
*Corporation of Edinburgh Perpetual Gold Challenge Cup	...					
Dr T. G. Nasmyth—Gold Medal	10	10	0			
				1352	5	0
Carry forward				£5464	12	6

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[1] Grant to Royal Scottish Forestry Society for Forestry Section.

* Challenge Prizes.

ABSTRACT OF PREMIUMS—*continued*

Brought forward		£5464 12 6

HORSES.

*Clydesdale Horse Society—Cawdor Challenge Cups	£105 0 0	
*Mr William Meiklem, Kirkcaldy—Gold Challenge Cup	115 10 0	
"William Taylor" Memorial Committee	10 0 0	
*Dumfriesshire Hunt, Dumfries Centenary Silver Challenge Cup	100 0 0	
Hunters' Improvement and National Light Horse Breeding Society—Gold Medal	10 0 0	
*Fife and Kinross Perpetual Gold Challenge Cup	200 0 0	
Department of Agriculture for Scotland	40 0 0	
The Highland Pony Society	20 0 0	
"Four Lovers of the Breed" (Shetland Ponies)	10 0 0	
Shetland Pony Stud-Book Society (Medal).		
		610 10 0

SHEEP.

Blackface Sheep-Breeders' Association—2 Silver Cups and 2 Gold Medals	£60 0 0	
*Cheviot Sheep Society—Borthwick Challenge Cup	25 0 0	
Cheviot Sheep Society—Gold Medal	7 7 0	
Northern Cheviot Sheep Breeders' Club	10 0 0	
*Renfrewshire Perpetual Gold Challenge Cup	250 0 0	
Tweeddale Gold Medal	25 0 0	
Society of Border Leicester Sheep Breeders—Silver Cup	10 10 0	
Society of Border Leicester Sheep Breeders—Gold Medals	20 0 0	
*Challenge Bowl for Oxford Down Sheep	50 0 0	
Oxford Down Sheep-Breeders' Association	21 0 0	
*Suffolk Sheep Society—Silver Cup	15 0 0	
Dorset Horn Sheep-Breeders' Association	5 0 0	
		498 17 0

GOATS.

Department of Agriculture for Scotland	£12 0 0	
*The late Lord Dewar—Silver Cup	21 0 0	
*Mrs S. Macdonald—Silver Cup	10 0 0	
		43 0 0

PIGS.

National Pig-Breeders' Association—Gold and Silver Gilt Medals and Prize Money	£20 0 0	
*Large Black Pig Society—Silver Cup	12 12 0	
Large Black Pig Society (and 2 Medals)	18 0 0	
		50 12 0

POULTRY.

*The late Lord Dewar—Champion Challenge Silver Salver		30 0 0

HONEY.

The Scottish Bee-Keepers' Association (and 2 Medals)	£10 10 0	
*Rev. John Beveridge, M.B.E., Championship Cup	5 5 0	
		15 15 0

RURAL INDUSTRIES.

Central Council of Scottish Women's Rural Institutes		32 0 0
Carry forward		£6745 6 6

* Challenge Prizes.

ABSTRACT OF PREMIUMS—*continued*

Brought forward . . .				£6745	6	6

HORSE-SHOEING AND SHOE-MAKING.

The Scottish Iron & Steel Co., Ltd., Glasgow (Silver Tea Service and £10)	£15	0	0			
Messrs W. Martin, Sons, & Co., Coatbridge (Gold Watch and £10)	15	0	0			
Messrs Neilson & Cleland, Limited, Coatbridge (Cutlery, &c.)	10	0	0			
National Master Farriers' and Blacksmiths' Assoc. (Gold Medal)	4	0	0			
Mustad Horse Nail Co. (2 Gold Medals) . . .	4	0	0			
Capewell Horse Nail Co. (Gold Medal) . . .	2	0	0			
				50	0	0

STOCK JUDGING COMPETITION.

*Messrs George Outram & Co., Ltd., Glasgow—'Glasgow Herald' Challenge Cup (and Gold Medal)	50	0	0
	£6845	6	6

* Challenge Prizes.

JOHN STIRTON, *Secretary.*

8 EGLINTON CRESCENT,
EDINBURGH, *February* 1932.

£1000 PREMIUM FOR NEW IMPLEMENT OR MACHINE.

REGULATIONS.

(Subject to modification.)

1. To mark the occasion of the Society's Hundredth Show in Edinburgh in 1931, the Society offers a premium of £1000 for an entirely New Implement or Machine, or a radical improvement on an existing Implement or Machine, suitable for use on Scottish Farms.

2. All Implements and Machines entered for the premium will be submitted to exhaustive practical trial.

3. The competition will be confined to Implements and Machines manufactured in Great Britain.

4. Manufacturers or Inventors desiring to enter an Implement or Machine must submit a complete specification (in duplicate) describing the Implement or Machine in detail, and giving full particulars of the new features and the materials employed in its construction, together with working machine-drawings to scale showing plan, elevation, and cross-section. The name of the Inventor and the approximate price must also be stated.

5. Entries for the premium will be received at any time up to 31st December 1932, at which date entries will close. Such entries will be accepted only if made by the actual Manufacturer or Inventor; but where an entry is made by a Manufacturer, who is not also the Inventor, he must produce evidence that the consent of the Inventor has been obtained to the making of the entry. Implements and Machines entered must be ready for practical trial not later than 1st March 1933, but those ready for trial at an earlier date may be tried at such times as the Board of Directors may decide.

6. It shall be left to the discretion of the Directors, on a report by the Judges, to determine whether any Implement or Machine submitted is of sufficient merit to warrant the award of the premium.

7. The decision of the Board of Directors will in all cases be final.

SILVER MEDALS FOR NEW OR IMPROVED IMPLEMENTS.

See Regulations on page 98.

FORESTRY EXHIBITION.

For information as to above, apply to the Secretary, Royal Scottish Forestry Society, 8 Rutland Square, Edinburgh.

WOOL DEMONSTRATIONS.

Arrangements will be made for Demonstrations on Wool, to be held in the Wool Shed on Wednesday, Thursday, and Friday, 22nd, 23rd, and 24th June.

The Society's Show for 1933 will be held at Dundee.

MEMBERS ADMITTED SINCE THE LIST WAS PUBLISHED IN APRIL 1931.

ARRANGED ACCORDING TO SHOW DISTRICTS.

(Elected 3rd June 1931 and 6th January 1932.)

1.—GLASGOW DIVISION

ARGYLL

Admitted
1931 Armour, Donald, Machrihanish Farm, Campbeltown
1931 Fearnside, Miss Elizabeth Fenwick, The Hotel, Ballachulish
1931 Fearnside, Miss Frances, The Hotel, Ballachulish
1931 Lees-Milne, Mrs Dorothy, Killundine, Drimnin, Argyll
1931 M'Vicar, A., Achanelid, Glendaruel, Argyll
1932 M'Vicar, Neil L., Poltalloch Estate Office, Kilmartin
1932 Morrison, John G., of Islay, Islay House, Bridgend, Islay
1931 Parsons, Herbert John, Achnaba, Lochgilphead

AYR

1931 Abel, Peter, Naparima, Mill Road, Irvine
1931 Ballantine, George, Millrig, Skelmorlie
1931 Black, Andrew, Novar, Knockinlaw Road, Kilmarnock
1932 Bone, Hugh, Secretary, Ayrshire Cattle Herd-Book Society, 58 Alloway Street, Ayr
1931 Craig, John, Cauldhame, Dunlop
1931 Forbes, J. D. Hastings, Jameston, Maidens, by Ayr
1931 Goldie, Thomas, Barassie Farm, Troon
1931 Guthrie, James, East Doura, Craigie, by Kilmarnock
1931 Houldsworth, Reginald Douglas Henry, Kirkbride, Maybole
1931 Hunter, John Roy, Secretary, Alexander Jack & Sons, Ltd., Maybole
1931 Kerr, Alexander Wyllie, Newhouse Farm, Kilbirnie
1931 Kilpatrick, Allan, Craigie Mains, Kilmarnock
1931 Kilpatrick, William J., Muirhouse, Kilmarnock
1931 Knox, Mrs, Parkhill, Dalry
1932 M'Bride, James, Overton Farm, Cunninghamhead, by Kilmarnock
1931 M'Fadzean, Hugh, Diddup, Saltcoats
1931 Paton, James G., Skelmorlie Mains, Skelmorlie
1931 Paton, John, Skelmorlie Mains, Skelmorlie
1931 Robertson, Thomas, Townhead of Drumley, Annbank
1931 Slimon, Robert Eric, Stoneyhill, Darvel
1932 Stewart, John, Broomwell, Girvan
1931 Weir, Miss M. I., N.D.A., C.D.A., 26 Barns Street, Ayr

BUTE

1932 Binnie, George, "Normanhurst," Craigmore, Bute

LANARK

1931 Bradburn, Thomas, Branch Manager, The Texas Oil Co., Ltd., 38 Bath Street, Glasgow, C. 2
1932 Brechin, A., 16 Mansion House Road, Langside, Glasgow
1931 Burns, James, 37 Dudley Drive, Glasgow, W. 2
1931 Carruthers, William, Nethertown, Auchenheath
1932 Copeland, A. R. A., West of Scotland Agricultural College, 6 Blythswood Square, Glasgow
1931 Cullen, Gavin, Leadloch, Fauldhouse (Lanarkshire)
1932 Donald, James, jun., Parkhead Farm, Bellshill, Glasgow
1931 Doull, Miss Margaret, N.D.D., 8 Balmoral Crescent, Queen's Park, Glasgow
1931 Ford, John, Glencairn, Orchard Street, Motherwell
1931 Frood, Walter, Millmoor, Sandilands, Lanark
1931 Gardner, Andrew (John Wallace & Sons, Ltd.), 34 Paton Street, Glasgow, E. 1
1932 Gill, W. Nelson, c/o Edmiston Brown & Co., Ltd., 45 Midwharf Street, Glasgow
1931 Grant, Lewis, 'The Scottish Farmer,' 93 Hope Street, Glasgow
1931 M'Cosh, Mrs W. W., Easter Moffat, Airdrie
1931 Mitchell, Stephen, Gilkerscleugh, Abington
1931 Ramsay, Archibald M., Millmoor, Market Road, Carluke
1931 Russell, Alexander, Greenrigg, Harthill
1931 Russell, A. E., Allanton Farm, Hamilton

1931 Scott, Henry (Henry Scott & Son), 24 Chapel Street, Airdrie
1931 Scott, James, Cockridge, Carstairs
1932 Smith, John (The Peat Moss Litter Supply Co., Ltd.), Waterloo Chambers, 19 Waterloo Street, Glasgow
1931 Watson, David King, Kirk-Knowe House, Wishaw
1931 Wilson, James, Rockmount, Thankerton
1931 Wilson, Stevenson, 62 James Street, Bridgeton, Glasgow
1931 Wood, John F., Hallcraig Mill, Airdrie

RENFREW

1931 Blythswood, The Lord, of Blythswood, Renfrew
1932 MacKay, Miss Helen Stewart, The Firs, Broomfield Road, Newton Mearns
1931 Nelson-Scott, Major G. S., O.B.E., Woodside, Giffnock
1932 Parsons, Mrs Winifred, Fordbank, Milliken Park
1932 Philip, Miss Irene, Fordbank, Milliken Park

2.—PERTH DIVISION

ANGUS

(Western District)

1931 Sandeman, Fred. D. Stewart, Laws, Kingennie
1932 Johnston, James, Cunmont, Kingennie
1932 Patterson, John, 5-7 West Port, Dundee
1931 Thoms, John L., Benvie, Invergowrie
1932 Thomson, Ralph S., Invercauld, Forfar
1931 Wilkie, Stewart, Pitscandly, Forfar

FIFE

1931 Balfour, Miss Alice G., Balbirnie, Markinch
1932 Bigham, Archibald F., Leys Park Road Cemetery Cottage, Dunfermline
1932 Dryburgh, Archibald, Methilhill Farm, by Windygates
1932 Drysdale, R. B., Westerton, Leslie
1931 Fleming, Alexander D., Culross Park, Culross
1931 Fowler, David, Bonhard Farm, Dunfermline
1931 Glencross, Robert, Largo Cottage, Glencraig
1931 Kerr, William, Kininmonth, Kinglassie
1931 M'Gregor, George, Murrayknowes, Cardenden
1931 M'Laren, Peter, Torrie House, Kingsbarns
1931 M'Niven, John, South Lambieletham, St Andrews
1931 Matthew, A. T., Collydean, Markinch
1931 Morris, George C., Mid-Grange, East Grange
1931 Robertson, James Y., Craigton, Cowdenbeath
1931 Roger, Charles A., Rumgally, Cupar, Fife
1931 Roger, Francis W., Kenley Green, St Andrews
1932 Rollo, John, Wester Forret, Cupar, Fife
1931 Simpson, David, "Aba," Murrell Road, Aberdour
1931 Smart, James, Baldastard, Leven
1931 Smith, John, Caskieberran, Leslie
1931 Stevenson, James, Chapel Home Farm, Kirkcaldy
1931 Strang, William, Dalginch, Markinch
1931 Todd, William D., Lochcraig, Glencraig
1931 Wallace, George, Harestanes Farm, Cardenden
1931 Wishart, James, Bankhead, Cairneyhill
1932 Wright, Thomas S., Burnside, Auchtermuchty
1931 Younger, Mrs Annie, Mount Melville, St Andrews

KINROSS

1931 Clark, Alexander, Gospetry, Milnathort
1931 Clark, Douglas Bruce, Gospetry, Milnathort

PERTH

(Perth Show District)

1931 Boyd, John, Dalchalloch, Calvine
1931 Bruges, W. Irving, Laighwood, Dunkeld
1931 Bryden, Hugh Niven, Ruthven House, Almondbank
1932 Cathcart, Charles Frederick, Lawgrove House, Inveralmond, Perth
1932 Clouston, Miss Florence M., Education Offices, Perth
1931 Don, Major John A., D.S.O., Cray, Glenshee, Blairgowrie
1931 Graham, James Maxtone, Redgorton, Perth
1931 Lindsay, Mrs A., Davaar, 51 King Street, Perth
1932 Marshall, Robert, jun., Bruar Farm, Blair-Atholl
1931 Maule, Lady, Dalreoch, Tummel Bridge, Pitlochry
1931 Wright, Mrs J. Moncrieff, Kinmonth, Bridge of Earn

3.—STIRLING DIVISION

CLACKMANNAN

1931 Cowan, Alexander M., Burnside, Dollar
1931 Fisher, John, jun., Jellyholm, Alloa

DUMBARTON

1932 Bannerman, John M., Old Manse, Rowardennan
1932 M'Aulay, John, Drumglas, Alexandria
1932 Macfarlan, John, Faslane, Shandon, Helensburgh
1931 Mitchell, John, Meikle Finnery, by Alexandria
1931 Prentice, Robert, Bannachra Farm, Helensburgh
1932 Rankin, James L., Badenheath, Condorrat, Dumbarton
1931 Steven, John, Woodend Farm, Helensburgh
1931 Watt, Robert, Milligs Farm, Helensburgh
1931 Watt, William R., Camis Eskan, Helensburgh
1931 Wilson, John M., jun., Garshake, Dumbarton

PERTH

(Stirling Show District)

1932 Bennie, James, Dunrachan, Muthill
1931 Cameron, Duncan A., The Bows, Dunblane
1931 Crawford, James, Blackdub, Blair Drummond, by Stirling
1931 Hamilton, John, Upper Lanrick, Doune
1931 Hogarth, Miss Jenny Alice, Strowan House, Crieff
1931 MacGregor of MacGregor, Lady, Edinchip, Lochearnhead
1932 M'Lennan, Miss P., Balvelachlan, Callander
1932 Maxwell, Robert, Kirklane, Blair-Drummond
1931 Pirie, Douglas Gordon, c/o Hon. G. Forbes-Sempill, Old Newton, Doune
1932 Ritchie, Charles, Comrie House, Comrie

STIRLING

1932 Adam, George, Greenyards, Bannockburn
1932 Bowie, Andrew, Gilmeadowland, Linlithgow (Stirlingshire)
1932 Bruce, Brig.-General Thomas, Inchyra, Polmont
1932 Cairnduff, Alfred, Boquhan, Balfron
1931 Campbell, Alexander, Duncraggan, Learmonth Street, Falkirk
1932 Cowan, Andrew, Lurg, Fintry
1932 Dalgleish, David, Seafield, Falkirk
1932 Downie, Henry F., M.R.C.V.S., 91 Graham's Road, Falkirk
1932 Elliot, E. G., 3 Millar Place, Stirling
1932 Erskine, Robert, Househill Farm, Larbert
1931 Esslemont, Mrs Susan Melville, Aotea Roa, Abercromby Drive, Bridge of Allan
1931 Galloway, Peter, c/o Messrs Thomas Binnie, Ltd., Falkirk
1932 Gilmour, Robert, Balquidderock, Bannockburn
1931 Gray, James, Craigs, Stirling
1932 Jardine, James, Boquhan, Balfron
1932 Johnston, James Frew, Roughlands, Carron, Falkirk
1931 Jones, Mrs Nancy A., Dunmore Park, Larbert
1932 Leggat, Alexander, Carbeth Home Farm, Balfron Station
1932 M'Gibbon, Miss Agnes W., Faraway Farm, Kippen Station
1932 M'Gilp, Ernest, Carbeth Home Farm, Balfron Station
1932 M'Grouther, Duncan, Cornton Road, Stirling
1931 M'Lean, Thomas, Lochengelly, Gartmore (Stirlingshire)
1931 M'Nicol, John, Pendreigh, Bridge of Allan
1931 Mailer, William, Offers Farm, Gargunnock
1931 Meiklejohn, Robert, St Ann's, Cornton Road, Causewayhead
1932 Millar, William M., Cleakerfield, Bannockburn
1932 Morrison, Robert N., Estate Office, Duntreath Castle, Blanefield
1932 Paterson, Daniel, Laighparks, Killearn
1932 Paterson, John, Carbeth Home Farm, Balfron Station
1932 Paton, James B., Lettre Farm, Killearn
1932 Paton, Robert C., Lettre Farm, Killearn
1932 Risk, James, The Garvald, by Denny
1931 Salvesen, Miss E. R., Lathallan, Polmont
1932 Sands, James, Ward Farm, Thornhill, by Stirling (Stirlingshire)
1932 Stevenson, James, 2 Douglas Terrace, Stirling
1932 Tough, William, Carbrook Mains, Larbert
1932 Turner, James, Loaninghead Farm, Balfron Station
1932 Ure, Miss Christian Margaret, Wheatlands, Bonnybridge
1931 Weir, Walter, B.Sc., N.D.A., N.D.D., Burnfoot, Falkirk
1932 Wilson, Miss Mary B., Blairessan, Killearn

4.—EDINBURGH DIVISION

MID-LOTHIAN

1931 Adams, Miss C. D., Handicrafts Secretary, S.W.R.I., 50 George Street, Edinburgh
1931 Alcock, Mrs N. L., F.L.S., Royal Botanic Garden, Edinburgh (14 Inverleith Row, Edinburgh)
1931 Anckorn, Herbert G., Solicitor, 11 Leamington Terrace, Edinburgh
1931 Arnott, Joseph, Edgelaw, Gorebridge
1932 Ballantyne, George, Claycote Dairy, Corstorphine
1932 Bertram, Adam, Ainville, Kirknewton
1932 Beveridge, William Dingwall Burnett (Scottish Agricultural Organisation Society, Ltd.), 5 St Andrew Square, Edinburgh
1931 Black, Charles E., 5 Grassmarket, Edinburgh
1932 Bonthron, Lawrence John, B.Sc. (Agric.), 1 Glengyle Terrace, Edinburgh
1931 Brewin, Mrs MacIver, Rose Cottage, East Trinity Road, Edinburgh
1931 Brown, George, Todhills, Dalkeith
1931 Brown, James Alexander, 13 North West Circus Place, Edinburgh
1931 Brown, William Watson, Muirhouse, Stow
1931 Bruce, Miss, Secretary, Highland Home Industries, Ltd., 111A George Street, Edinburgh
1931 Bryce, George F. D., Mayfield, Ratho
1931 Cowper, Mrs M. B., Gogar House, Corstorphine
1931 Davidson, George D., 43 Elliot Road, Colinton
1932 Elliot, John, jun., Ravenshaugh, Bilston, Mid-Lothian
1931 Fleming, Robert, Dean Park, Balerno
1932 French, David, Blacksmith, Tinto Place, Musselburgh
1932 Grant, Miss Rose J. E., Secretary, Society of Border Leicester Sheep Breeders, 11 St Ronan's Terrace, Edinburgh
1931 Handford, J. J. W., Department of Agriculture for Scotland, York Buildings, Queen Street, Edinburgh
1931 Harwell, George C. M., Overton, Kirknewton

1931 Heddle, R. G., East of Scotland College of Agriculture, 13 George Square, Edinburgh
1931 Horsburgh, Peter, Broachrigg, Rosewell
1932 Hunter, Duncan, Thornton Farm, Rosewell
1932 Ireland, Richard Morison, W.S., 57 Queen Street, Edinburgh
1931 Jack, George G., Brunstane Mill, Musselburgh
1931 Jackson, Mrs Robert, Rosemains, Pathhead
1931 Kennedy, A. M'Leod, West Pilton Farm, Davidson's Mains
1932 Laidlaw, James Allen, 260 Morrison Street, Edinburgh
1931 Leask, William D., National Bank of Scotland, Ltd., 81 Princes Street, Edinburgh
1931 Little, A. C., 22 Eglinton Crescent, Edinburgh
1931 Miller, Alexander, "Northwood," Harburn
1931 Miller, Andrew, Newfarm, Mid-Calder
1932 Miller, Joseph, East Haugh, Kirknewton
1931 Noble, Robert, Auchendinny Mains, Penicuik
1931 Paris, James, Craigend, Craigmillar
1931 Pickard, Dr J. N., Institute of Animal Genetics, West Mains Road, Edinburgh
1931 Roberts, William, Gowanhill Farm, Currie
1931 Rodger, James, Stenhouse Mills, Gorgie, Edinburgh
1932 Scott, James Henderson, 5 York Place, Edinburgh
1932 Sharp, Martin Howard, Union Bank of Scotland, Haymarket, Edinburgh
1931 Simpson, Mrs I. A., 35 Chester Street, Edinburgh
1931 Simpson, Robert, Barbachlaw, Inveresk
1931 Smaill, James, Drum Dairy, Gorgie, Edinburgh
1931 Smith, Mrs A. F., Ardmohr, East Calder
1931 Smith, G. A. Buchanan, Lymphoy, Currie
1931 Smith, James L. S., 29 Wardie Road, Edinburgh
1931 Smith, Miss M. D. Buchanan, Lymphoy, Currie
1932 Stirton, Mrs C. M. L., Pinkiepans House, Musselburgh
1931 Sutherland, James Alexander Stewart (Wilson's (Penicuik), Ltd.), Penicuik
1931 Thompson, Donald, 5 Colinton Road, Edinburgh
1931 Thomson, Thomas, Muirhouse, West Calder
1932 Wardlaw, John Millar, Millrig Farm, Kirknewton
1931 Watson, John, Main Street, West Calder
1931 Watt, William, W.S., 28 Charlotte Square, Edinburgh

EAST LOTHIAN

1932 Baxter, John, Ormiston, East Lothian
1931 Dickson, James, Brigend Farm, Drem
1931 Forrest, Adam S., Balgone Barns, North Berwick
1932 Gibson, George R., Fenton Barns, Drem
1931 M'Laren, John, Ballencrieff, Longniddry
1931 MacNeil, Miss Minnie S., Northfield Mains, Prestonpans
1931 Mitchell, David, Blackdykes, North Berwick
1931 Mitchell, Hunter F., North Elphinstone, Tranent
1931 Mitchell, Robert, Wamphray, North Berwick
1931 Robb, William, jun., "Cornhill," Ballencrieff, Longniddry
1931 Turnbull, Miss Helene, Bowmont, Dunbar
1931 Tweedie, A. J., Phantassie, Prestonkirk
1931 Tweedie, Robert Reginald, Phantassie, Prestonkirk

WEST LOTHIAN

1931 Braes, Peter, Champany, Linlithgow
1931 Cadzow, Mrs James, Kilpunt, Broxburn
1931 Cadzow, Mrs John, Glendevon, Winchburgh
1931 Dandie, Walter, Dales, Whitburn
1931 Drummond, William M., Stanley House, Birdsmill, Broxburn
1931 Gray, George, Kettleston Mains, Linlithgow
1931 Lyall, John, B.Sc. (Agric.), 2 Violet Bank, Bathgate
1931 Paul, James, Stacks, Linlithgow
1931 Russell, William, Wester Dechmont, Uphall
1931 Wardlaw, Thomas, Learielaw, Broxburn
1931 Weddell, John Scott, Wyndford, Uphall
1931 Weddell, Robert Alexander, Wyndford, Uphall
1932 White, James, Airngath, Linlithgow
1931 Wilson, James, Bankhead, Uphall
1931 Wilson, Robert D. T., Powflats Farm, Broxburn

5.—ABERDEEN DIVISION

ABERDEEN

1931 Bain, Robert, B.Sc., Craibstone, Bucksburn
1931 Bruce, Miss Mary C., Inschfield, Insch
1931 Cruickshank, Miss Mary Jane, Errolston Farms, Cruden Bay
1931 Fowler, Alexander, The Home Farm, Pittodrie, Pitcaple
1932 Fowlie, T. G., Road Surveyor, Turriff
1931 Gordon, Arthur C. (Aberdeen Lime Company), 80 Waterloo Quay, Aberdeen
1932 Grant, John, Crimonmogate Home Farm, Lonmay
1932 Grant, John C., M.R.C.V.S., Marischal College, Aberdeen
1931 Hepburn, William, F.R.C.V.S., 74 Shiprow, Aberdeen
1931 Maitland, George, Balgownie Dairy, 574 George Street, Aberdeen
1932 Milne, Henry, Balnagarth Villa, Balnagask Road, Aberdeen
1932 Morrison, Guy Donald, North of Scotland College of Agriculture, Marischal College, Aberdeen
1931 Ross, Alexander (Aberdeen Lime Company), 80 Waterloo Quay, Aberdeen
1931 Smith, Allan Innes, The Neuk, Tarves
1932 Smith, William, Bogside, Auchterless

ANGUS

(Eastern District)

1931 Jackson, James, Waulkmill Farm, Inverkeilor
1931 M'Donald, Miss Jessie, Blackhall, Brechin
1931 Mitchell, Alexander C., Balrownie, Brechin
1931 Pullar, John, Syde of Stracathro, Brechin
1931 Ritchie, James, Blackhall, Brechin
1932 Watson, Miss Elizabeth, N.D.D., Edinburgh and East of Scotland College of Agriculture, Prudential Buildings, Arbroath
1931 Weighton, John Henry, Brax, Arbroath

BANFF

1932 Calder, Charles, Netherton Farm, Findochty
1931 Greig, William, Little Greenfold, Bridge of Marnoch
1931 Robertson, James, North Burreldales, Alvah
1932 Wilson, James O., Gellyhill Banff

KINCARDINE

1932 Bell, David J., "Dunalistair," Stonehaven

6.—DUMFRIES DIVISION

DUMFRIES

1931 Bell-Irving, Miss Mary, White Hill, Lockerbie
1931 Brook, Captain Edward William, of Kinmount and Hoddam, Annan
1932 Byers, John A., 61 High Street, Lockerbie
1932 Galbraith, Major James E., D.S.O., Lochanhead House, Dumfries
1932 Greenshields, John, Jardine Hall Estate Office, Lockerbie
1931 Harkness, William, Bardennoch, Moniaive
1932 Henderson, William Millican, Solicitor, Thornhill
1932 Knox, Alec, British Linen Bank Buildings, Annan
1931 MacArthur, Miss Mary, N.D.D., C.D.A., Ellerslie, Noblehill, Dumfries
1931 Ritchie, Leslie S., Barrasgate, Annan
1931 Salvesen, E. T., Jardington, Dumfries
1931 Scott, John, Milton, Beattock
1931 Simpson, William Brown, The Wood, Parkgate, Dumfries
1932 Wilson, Joseph, Hoddam Castle Stables, Ecclefechan
1931 Wyllie, Robert A., Saughtrees, Beattock

KIRKCUDBRIGHT

1931 Campbell, Mrs William, Mains of Twynholm, Twynholm
1932 Dalziel, Thomas B., of Borgue House, Kirkcudbright
1931 Grierson, J. Clem, Auchenlarie, Gatehouse-of-Fleet
1931 Hogg, Alexander, Upper Senwick, Kirkcudbright
1931 Kean, James Coates, Balannan, Ringford
1931 Montgomery, Robert, Solicitor, Kirkcudbright
1931 Wallace, Robert, Gordon House, Kirkcudbright

WIGTOWN

1932 Douglas, Alexander Thomas, Stair Drive, Stranraer
1932 Harper, Thomas, Roslyn, London Road, Stranraer
1931 Hewetson, John, Upper Barr, Newton Stewart
1931 Wright, David T., Dalminnock, near Stranraer

7.—INVERNESS DIVISION

CAITHNESS

1932 Angus, Charles, Oldfield, Thurso
1931 Begg, James, East Murkle, Castletown
1931 Doull, Alexander, Factor, Lybster
1932 Fraser, Robert G., Auctioneer, Thurso
1931 Henderson, Robert, Netherside, Gillock, by Halkirk
1931 Leitch, Donald S., Factor, Watten Lodge, Watten
1931 Leitch, Murdo, Achingills, Thurso
1931 M'Kay, Ben. S., Geise Little, Thurso
1932 Mackay, William, Mill Bank, Thurso
1931 Miller, Alexander, Clayquoys, Wick
1931 Miller, David, Upper Milton, Wick
1931 Miller, Robert, Upper Milton, Wick
1931 Morris, David, Olrig Mains, Castletown
1931 Morris, John, North Bilbster, Watten
1931 Shearer, Donald, Borrowston, Thurso
1931 Simpson, A. D., Royal Insurance Co., Ltd., 16 Back Bridge Street, Wick
1931 Sinclair, John James, Lieurary, Westfield, Thurso
1931 Younger, James, Hoy, Castletown

INVERNESS

1931 Blackburn, Peter, Roshven, Lochailort
1932 Campbell, Iain, Estate Office, Belladrum, Beauly
1932 Chalmers, Robert W., Estate Manager, Seafield Estates, Drumnadrochit, Inverness
1931 Cumming, Alexander, Dochfour Home Farm, by Inverness
1932 Gossip, W. M. (Mitchell & Company), 22 Hamilton Street, Inverness
1931 Hutchison, James Moir, Balloan Farm, Inverness
1931 MacGillivray, Donald, Pitmain, Kingussie

1932 Mackenzie, Miss K. H., Glenkyllachy, Tomatin
1931 Mackenzie, Mrs Alexander, of Farr, House of Farr, Inverness
1932 Norrie, John E., 2 Inglis Street, Inverness

MORAY

1932 Allan, Alexander, Sweethillock, Lossiemouth
1931 Boyd, Alexander, Gordon-Richmond Estate Office, Fochabers
1932 Farquhar, Joseph, Bishopmill, Elgin
1932 M'Donald, Duncan George, Easter Coltfield, Alves, by Forres
1932 Morrison, Andrew, Brodie Mains, Forres
1932 Wildgoose, William, Newlands, Lossiemouth

NAIRN

1932 Campbell, Colonel The Hon. Ian Malcolm, D.S O., Lethen, Nairn
1931 Couper, D. U., Skenepark, Nairn
1932 Wilson, James, Broadshaw, Moyness

ORKNEY AND SHETLAND

SHETLAND

1931 Niven-Spence, Major Basil H. H., Hall of Uyea, Uyeasound, Lerwick
1931 Sandison, Ian E. M., Houlland, Baltasound, Shetland

ROSS AND CROMARTY

1931 Gillanders, Andrew, Humberston, Dingwall
1932 Gordon, John O., Bindal, Portmahomack
1932 Henderson, William John, 5 High Street, Dingwall
1932 MacKenzie, Donald, Contractor, Academy Street, Tain
1931 Mackenzie, William G., of Balnagall, Fearn
1932 M'Lennan, John, Moultavie, Alness
1932 MacLeod, Alexander, "Craigroy," Invergordon
1932 Macrae, D. J., Mountrich House, Dingwall
1931 Moore, Allan, Drummond, Evanton
1932 Rennie, G. J., Brae of Balnabeen, Conon Bridge
1932 Souter, George, Drynie Farm, Dingwall

8.—BORDER DIVISION

BERWICK

1931 Buchanan, Walter, Cowrig Farm, Greenlaw
1931 Currie, J. H., Swinton House, Duns
1931 Currie, Mrs J. H., Swinton House, Duns
1931 Forrest, Frank Weir, Boon, Lauder
1931 Grant, Robert Harley, of Georgefield, Earlston
1931 Gray, J. W., East Reston, Reston
1931 Hogg, Mrs William, Birkenside, Earlston
1932 Prentice, Alexander Torrance, Tweedsyde, Berwick-on-Tweed
1931 Sutherland, James, Headshaw, Lauder
1931 Trotter, Henry Redvers, Charterhall, Duns

PEEBLES

1931 M'Kill, William, Mitchellhill, Broughton, by Biggar
1931 MILLER-CUNNINGHAM, Sir George, K.B.E., C.B., of Leithenhopes, Leithen Lodge, Innerleithen

ROXBURGH

1931 Hedley, George, jun., Howpasley, Hawick
1931 Mackay, John H., Eldhurst, Melrose
1931 Renwick, Ex-Provost James, Hawick

SELKIRK

1931 Pate, William, Fairnilee, Galashiels
1931 Sutherland, John, Crosslee, Ettrick, Selkirk
1931 Todd, James Craig, Threepwood, Galashiels

ENGLAND AND WALES

1931 Armstrong, R. A. (The London & Provincial Moss Litter Co., Ltd.), "Gilnockie," Skinburness Road, Silloth
1931 Atkinson, Captain Frank Buddle, Gallowhill Home Farm, Morpeth
1932 Beck, G. M., The Lane, Ravenstonedale, Westmorland
1932 Briggs, Miss Susan Beatrice, Moorlands, Sunderland
1932 Bruce, William Laurie, 9 Woodhouse Square, Clarendon Road, Leeds
1931 Buckle, William Watson, Old Lane Farm, Colton, Tadcaster, Yorks.
1931 Butts, Graham W. (H. A. Butts & Sons), 4 Lloyd's Avenue, London, E.C. 3
1931 Carlyle, Thomas (Manager, The London & Provincial Moss Litter Co., Ltd.), 7 The Crescent, Carlisle
1931 Chartres, Charles Borthwick, Mindrum, Northumberland
1932 Rae, John, Craignair, St Michael's Road, Blundellsands, Lancs.
1932 Smalley, J. B., Birkby Hall, Cark-in-Cartmel, Lancs.
1932 Willis, John A., Manor House, Carperby, Yorks.

INDEX.

Abstract of Accounts, 362.
Accounts—see Finance.
Agricultural Depression, Proceedings in regard to, 374; Notice of motion by Captain John MacGillivray, 388; Motion submitted and approved, 390, 391.
Agricultural Education: Regulations and Syllabus, Appendix, 16.
Agricultural Examinations for 1932, Date of, Appendix, 15, 18, 28.
Agricultural Policy, Notice of motion by Captain John MacGillivray, 388; Motion submitted and approved, 390, 391.
Agricultural Research in Scotland in 1931: Department of Animal Genetics, University of Edinburgh, 152; Animal Diseases Research Association, 156; Rowett Research Institute, 158; Scottish Plant Breeding Station, 160; West of Scotland Agricultural College, 162; Hannah Dairy Research Institute, 165; Macaulay Institute for Soil Research, 166.
Agricultural Statistics, 241.
Analyses for Members during 1931, by Dr J. F. Tocher, 195.
Animal Diseases Research Association: Grant of £200 recommended, 377; Approved, 395; Congratulatory message from, 369.
Arbiters, Panel of, Proceedings in regard to, 383.
Argyll Naval Fund: Accounts, 366; Report to General Meeting, 402.
Arms, Coat of, for Society, Proceedings in regard to, 374.

Barley, Price of, for 1931, 255.
Beef Scheme, National Mark, Proceedings in regard to, 382, 385.
Board Meeting, Date of March Meeting, 391.
Botanical Department, Appendix, 58.
Bovine Tuberculosis, Eradication of, Proceedings in regard to, 371, 373, 382; Report to General Meeting, 404, 405.
Bradley, Principal O. Charnock, M.D., &c., The Dentition of the Pig, 111.

Calves, Some Economic Methods of Rearing, by Principal W. G. R. Paterson, B.Sc., N.D.A.(Hons.), 97.
Carrick, William, Death of, 380.
Cereal and other Crops of Scotland for 1931, 201.
Chairman of Board, Alexander Murdoch, East Hallside, elected, 380.
Chemical Department, Appendix, 46.
Coat of Arms for Society, Proceedings in regard to, 374.
Committees for 1931-32, Appendix, 8.
Compensation: Table showing the value of Feeding-stuffs as Manure per ton, Appendix, 55.
Cottages and Gardens: Regulations and Premiums offered in 1932, Appendix, 79.
Crichton, J., M.A., B.Sc., F.R.S.E., The Weather of Scotland in 1931, 229.
Crops of Scotland for 1931, 201.

Dairy Department: Regulations and Syllabus of Examination, Appendix, 26.
Dairy Examination for 1932, Date of, Appendix, 15, 28.
Deaths of—
E. Douglas Paton, 369; Hugh M. Leadbetter, 379; Alexander P. Gordon, 380; William Carrick, 380.
Deer, Damage by, Proceedings in regard to, 385, 392, 393.
Dentition of the Pig, by Principal O. Charnock Bradley, M.D., &c., 111.
Department of Agriculture for Scotland, Congratulatory Address to Society, 375.
Depression, Agricultural, Proceedings in regard to, 374; Notice of motion by Captain John MacGillivray, 388; Motion submitted and approved, 390, 391.
Development of the Sheep Industry in the Highlands and North of Scotland, The Rise and, by Professor J. A. S. Watson, 1.
Director, Resignation of, The Lord Scone resigns office, 392.
Directors for 1931-32, Appendix, 6.
Directors, Representatives on other Bodies, Appointment of, 380; Appendix, 13.

Discolouration of Wool, Proceedings in regard to, 371.
District Competitions : Awards in 1931, 356—Premiums offered in 1932, Appendix, 61—Report to General Meeting, 404.
Donation, £25 by Mr Alec Steel, 379.
Dumfries Show, 1930 : Alterations in Prize List, 357, 374.
Dundee Show, 1933, H.R.H. Duke of York accepts office as President, 389 ; Proceedings in regard to, 376, 385 ; Reports to General Meetings, 396, 402.

Edinburgh Corn Market Grain Tables for 1931, 255.
Edinburgh Corporation Gold Cup, Presentation of, 401.
Enemies, Insect and other, in 1931, by R. Stewart MacDougall, D.Sc., &c., 130.
Entomological Department, Appendix, 60.
Eradication of Bovine Tuberculosis, Proceedings in regard to, 371, 373, 382 ; Report to General Meeting, 404, 405.
Essays and Reports, Appendix, 61.
Establishment for 1931-32, Appendix, 6.
Examinations, Dates of, Appendix, 15, 18, 28.
Exportation of Horses Bill, Proceedings in regard to, 372.

Feeding-stuffs, Table showing the value of, as Manure per ton, Appendix, 55.
Fertility of Scottish Sheep Grazings, Restoring the, by J. B. Orr, M.D., &c., and Allan H. H. Fraser, B.Sc., M.D., 64.
Finance, Accounts for 1930-31, 362 ; Proceedings in regard to, 372, 374, 383, 385, 386, 388, 393, 395 ; Report to General Meeting, 402.
Finger-and-Toe in Turnips, The Prevention of, by Professor James Hendrick, B.Sc., F.I.C., 52.
Foot-and-Mouth Disease, Proceedings in regard to, 378.
Forestry Department : Regulations and Syllabus of Examination, Appendix, 35.
Fraser, Allan H. H., B.Sc., M.D., and J. B. Orr, M.D., &c., Restoring the Fertility of Scottish Sheep Grazings, 64.
Funds, State of the, 360.

General Meetings, 395, 397, 401.
Glasgow Veterinary College, Grant of £100 recommended, 374 ; Confirmed, 377 ; Approved, 395.
Gordon, Alexander P., Death of, 380.
Grain, Prices of, for 1931, in Edinburgh Corn Market, 255.
Grants to Local Societies, 404.
Grassland, Intensive Manuring of, Results obtained from the Craibstone Drain Gauges, by Professor James Hendrick, B.Sc., F.I.C., and H. D. Welsh, 86.
Grazings, Restoring the Fertility of Scottish Sheep, by J. B. Orr, M.D., &c., and Allan H. H. Fraser, B.Sc., M.D., 64.
Greig, Dr J. Russell, Louping-Ill, 26.

Hendrick, Professor James, B.Sc., F.I.C., The Prevention of Finger-and-Toe in Turnips, 52.
Hendrick, Professor James, B.Sc., F.I.C., and H. D. Welsh, Intensive Manuring of Grassland, Results obtained from the Craibstone Drain Gauges, 86.
Highland and Agricultural Society : Proceedings, 369—Constitution, Appendix, 3—Privileges of Members, Appendix, 4—Establishment, Appendix, 6—Meetings, Appendix, 14.
Highland Reel and Strathspey Society, Grant of £30, 395.
Highlands and North of Scotland, The Rise and Development of the Sheep Industry in the, by Professor J. A. S. Watson, 1.
H.R.H. The Prince of Wales, Letter from regarding Hundredth Show, 381, 395 ; Thanks for group Photograph, 391 ; Vote of Thanks to, 401.
H.R.H. The Duke of York agrees to accept office of President, 389.
Hoeing Competitions : Regulations for, Appendix, 81.
Horses Bill, Exportation of, Proceedings in regard to, 372.
Hundredth Show, Edinburgh 1931, Report on, 263 ; Premiums awarded at, 287 ; Judges, 353 ; Stewards, 354 ; Attending Members, 355 ; Abstract of Accounts, 364 ; Prize List of, Appendix, 84 ; Proceedings in regard to, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 381 ; Reports to General Meetings, 396, 402 ; Proceedings at General Meeting in Showyard, 397-401 ; Votes of Thanks, 398-401.

Implement or Machine, New, Premium of £1000, Appendix, 150.
Insect and other Enemies in 1931, by R. Stewart MacDougall, D.Sc., &c., 130.
Inspection of Growing Crops of Potatoes, Proceedings in regard to, 388, 390.
Intensive Manuring of Grassland, Results obtained from the Craibstone Drain Gauges, by Professor James Hendrick, B.Sc., F.I.C., and H. D. Welsh, 86.
Inverness-shire Farmers' Society, Resolution regarding duty on Spirit, 392.
Inverness Show, 1932, Proceedings in regard to, 382, 384, 386, 387, 389, 390, 392 ; Reports to General Meetings, 396, 402.

Leadbetter, Hugh M., Death of, 379.
Long Service Certificates and Medals, Regulations, Appendix, 83.
Lord Provost of Edinburgh, Congratulations to Sir Thomas B. Whitson, 377.
Louping-Ill, by Dr J. Russell Greig, 26.

MacDougall, R. Stewart, D.Sc., &c., Insect and other Enemies in 1931, 130.
Manure, Table showing the Value of Feeding-stuffs as, per ton, Appendix, 55.
Manures, Instructions for Valuing, Appendix, 52.
Manuring of Grassland, Intensive, Results obtained from the Craibstone Drain Gauges, by Professor James Hendrick, B.Sc., F.I.C., and H. D. Welsh, 86.
Medals, Ploughing, Regulations for, Appendix, 81.
Meetings, Proceedings at Board and General, 369-405.
Meetings, Regulations regarding, Appendix, 14.
Members, Analyses for, during 1931, by Dr J. F. Tocher, 195.
Members, Privileges of, Appendix, 4.
Milk Records, by William Stevenson, B.Sc., 169.
Murdoch, Alexander, elected Chairman of Directors, 380.
Musk Rat, Report by Dr R. Stewart MacDougall, 403.

National Diploma in Agriculture: Report on Examination, 396; Regulations and Syllabus, Appendix, 16; Successful Candidates in 1931, Appendix, 24.
National Diploma in Dairying: Report on Examinations, 404; Regulations and Syllabus, Appendix, 26; Successful Candidates in 1931, Appendix, 33.
National Horse Association, Proceedings in regard to, 371.
National Mark Beef Scheme, Proceedings in regard to, 382, 385.
National Trust for Scotland, Representative appointed on Council of, 388.
New Implement or Machine: Premium of £1000, Appendix, 150.

Oats, Price of, for 1931, 255.
Office-bearers, 1931-32: Election of postponed, 395; Election of, 400.
Orr, J. B., M.D., &c., and Allan H. H. Fraser, B.Sc., M.D., Restoring the Fertility of Scottish Sheep Grazings, 64.

Panel of Arbiters, Proceedings in regard to, 383.
Paterson, Principal W. G. R., B.Sc., N.D.A.(Hons.), Some Economic Methods of Rearing Calves, 97.
Paton, E. Douglas, Death of, 369.
Pig, The Dentition of the, by Principal O. Charnock Bradley, M.D., &c., 111.
Ploughing Competitions, Regulations for, Appendix, 81.
Policy, Agricultural, Notice of motion by Captain John MacGillivray, 388; Motion submitted and approved, 390, 391.
Pot Still Malt Distillers' Association of Scotland, Resolution by, 389.
Potatoes, Inspection of Growing Crops of, Proceedings in regard to, 388, 390.
Premiums awarded in 1931, 356; offered in 1932, Appendix, 61.
Prevention of Finger-and-Toe in Turnips, by Professor James Hendrick, B.Sc., F.I.C., 52.
Prices of Grain for 1931, 255.
Prices of Sheep, 256.
Prices of Wool, 260.
Privileges of Members, Appendix, 4.
Proceedings at Board Meetings, 369-393.
Proceedings at General Meetings, 395-405.

Quarantine Station for Scotland, Proceedings in regard to, 383, 388.

Rainfall Records for 1931, 240.
Rat, Musk, Report by Dr R. Stewart MacDougall, 403.
Rearing Calves, Some Economic Methods of, by Principal W. G. R. Paterson, B.Sc., N.D.A.(Hons.), 97.
Records, Milk, by William Stevenson, B.Sc., 169.
Representatives appointed on other Bodies, 380; Appendix, 13.
Research in Scotland, Agricultural, in 1931, 152.
Resignation of Director, The Lord Scone resigns office, 392.
Restoring the Fertility of Scottish Sheep Grazings, by J. B. Orr, M.D., &c., and Allan H. H. Fraser, B.Sc., M.D., 64.
Rise and Development of the Sheep Industry in the Highlands and the North of Scotland, by Professor J. A. S. Watson, 1.
Royal (Dick) Veterinary College, Congratulatory Address to Society, 372.

St Kilda Fund, Proceedings in regard to, 372, 385.
Science Committee: Proceedings of, 371, 389.
Scone, The Lord, resigns from Board on account of Parliamentary duties, 392.
Scotland, Agricultural Research in, in 1931, 152.
Scotland, Crops of, in 1931, 201.
Scottish Agricultural Organisation Society, Grant of £100 recommended, 385; Confirmed, 388; Approved, 402.

Sheep Grazings, Restoring the Fertility of Scottish, by J. B. Orr, M.D., &c., and Allan H. H. Fraser, B.Sc., M.D., 64.
Sheep Industry in the Highlands and North of Scotland, The Rise and Development of the, by Professor J. A. S. Watson, 1.
Sheep, Prices of, 256.
Show of 1933, Invitation to hold Show at Perth, 371; Report of Sites Committee, 376, Show to be held at Dundee, 377, Reports to General Meetings, 396, 402.
Show of 1934, Resolution to hold Show in Glasgow Show Division, 388, Approved, 403; Sites Committee appointed, 390.
Society's Coat of Arms, Proceedings in regard to, 374
Some Economic Methods of Rearing Calves, by Principal W. G. R Paterson, B Sc., N.D.A (Hons), 97.
State of the Funds, 360.
Statistics, Agricultural, 241.
Steel, Alec, Donation of £25 by, 379
Stevenson, William, B Sc.. Milk Records, 169.
Students' Representative Council, West of Scotland Agricultural College, Request that holders of N D A be elected Members at reduced rates not granted, 370, 374

Tocher, Dr J. F.. Analyses for Members during 1931, 195
'Transactions': Payments to Writers, 377; Proceedings in regard to, 386, 393.
Turnips, The Prevention of Finger-and-Toe in, by Professor James Hendrick, B.Sc., F.I.C., 52.

Unit Values, Schedule of, Appendix, 51.

Veterinary Department: Medals awarded in 1931, 356; Appendix, 45.

Warble-fly Investigation: Proceedings in regard to, 385, 387, 389, Reports to General Meetings, 397, 403.
Watson, Professor J. A. S., The Rise and Development of the Sheep Industry in the Highlands and the North of Scotland, 1.
Weather of Scotland in 1931, by J Crichton, M.A., B Sc., F.R.S.E., 229.
Welsh, H. D, and Professor James Hendrick, B Sc., F.I.C., Intensive Manuring of Grassland, Results obtained from the Craibstone Drain Gauges, 86.
West of Scotland College of Agriculture, Students' Representative Council, Request that holders of N.D.A. be elected Members at reduced rates not granted, 370, 374.
Wheat, Price of, for 1931, 255.
Whitson, Sir Thomas B, Lord Provost of Edinburgh, congratulations to, 377.
Wool, Discolouration of, Proceedings in regard to, 371
Wool, Prices of, 260

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